CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., K.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

VOL. LII.
OF THE THIRD SERIES.
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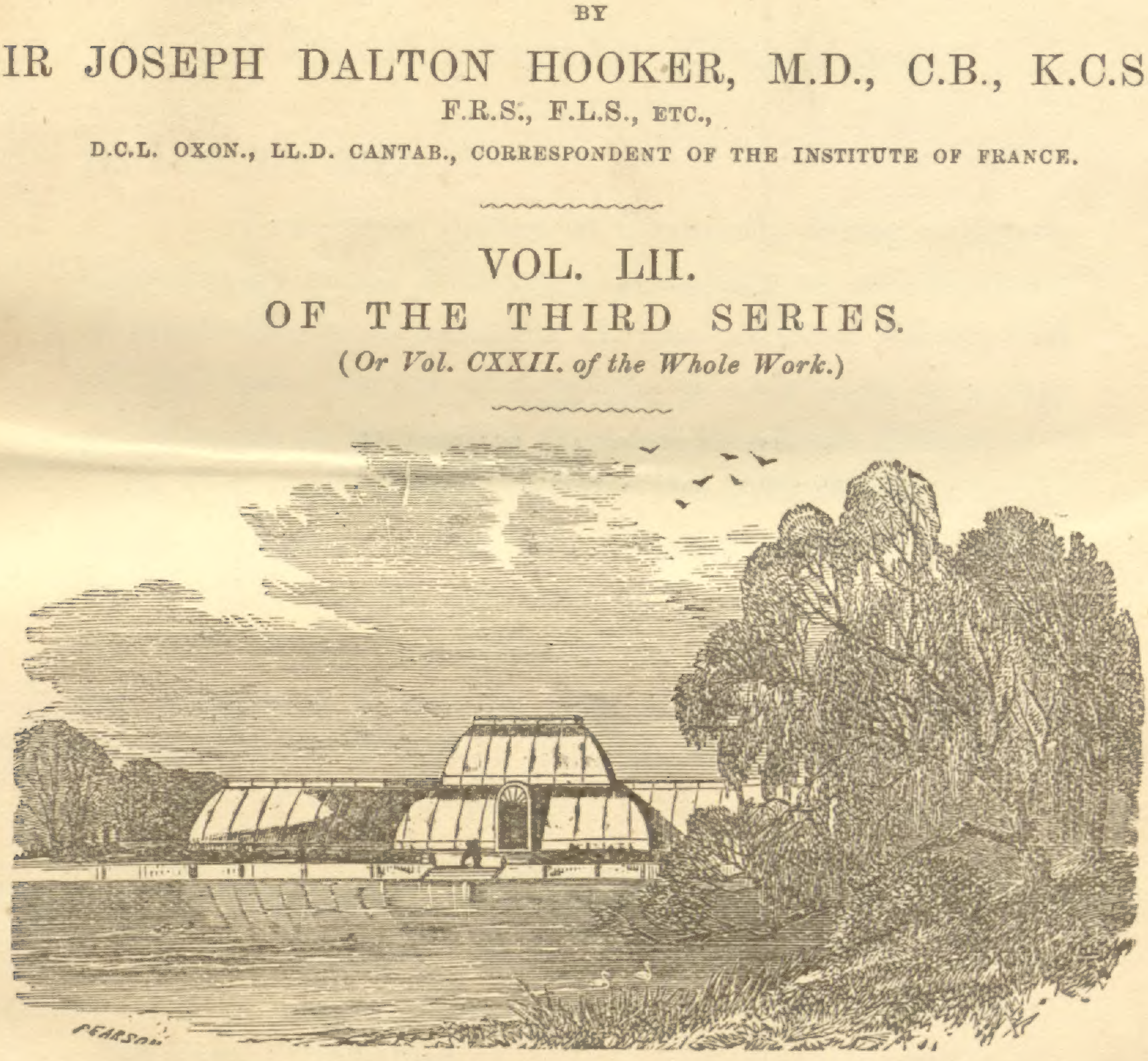

"Among the distant mountains flower and weed,
Which thou hast taken to thee as thine own,
Making all kindness registered and known."

WORDSWORTH.

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MR. GUSTAV MANN,

Late Assistant Conservator of Forests, Assam.

My dear Mr. Mann,

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J. D. HOOKER.

The Camp, Sunningdale.

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Late Director of the Royal Botanic Gardens of Kew.

Nature and Art to adorn the page combine,
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Tab. 7452.

STANHOPEA Haseloviana.

Native of Peru.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Stanhopea, *Frost*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 549.)

Stanhopea *Haseloviana*; pseudobulbis ampullæformibus, foliis petiolatis oblongo-lanceolatis acuminatis sub 7-nerviis, racemis 3–5-floris, pedunculo bracteis scaphæformibus sepalisque dorso nigro punctulatis, floribus maximis, sepalis elliptico-rotundatis petalisque intus pallidis maculis magnis rubris ambitu irregulariter crenatis conspersis, lateralibus reflexis, dorsali angustiore arcuato, petalis erectis v. reflexis obovato-oblongis acuminatis pallide roseis, labello elongato sigmoideo-flexuoso vix unguiculato purpureo maculato, hypochilio lato carnoso basi saccato sacco intus fimbriato, epichilio 3-partito, segmentis lateralibus corniformibus, intermedio late unguiculato ovato-rotundato obtuso cuspidato, columna purpureo maculata supra medium anguste alata apice bifida lobis acutis.

S. Haseloviana, *Reichb. f. Xen. Orchid.* vol. i. p. 123, 196, t. 72, *et in Ott & Dietr. Algem. Gartenz.* 1855, p. 322 (*errore* Haseloffiana).

The flowers of certain Orchids are amongst the largest in the vegetable kingdom. Referring to Mr. Rolfe on this subject he has given me the following as the most gigantic of Orchid flowers in his experience, namely, *Sobralia manantha*, Lindl. (t. 4446), and *Coryanthes Fieldingii*, Lindl., both nine inches in diameter; *Cattleya Warscewiczii*, Reichb. f., eight inches; *Stanhopea tigrina*, Batem. (t. 4097) seven inches; and he has found the petals of *Selenipedium caudatum*, Reichb. f., to measure thirty-five. Of the seven species of *Stanhopea* figured in this magazine *S. Haseloviana* is most nearly allied to *S. oculata*, Lindl. (Tab. 5300), which has similar annular spots with crenulate margins on the petals and sepals, but which besides its much smaller size, differs in the long acuminate bracts, very long ovaries, narrow pale yellow sepals and petals, and in the lip, which has not the double flexure of *S. Haseloviana*. The form of the epichile is the same in several other species of the genus.

S. Haseloviana is a native of Northern Peru, where it

was discovered by the indefatigable collector, Warscewicz, half a century ago.

The specimen figured was obtained from the celebrated establishment of M. Linden at Brussels, "L'Horticulture Internationale" in 1893. It flowered in the Royal Gardens, Kew, in July, 1894, and perfected its leaves in March, 1895.

Descr.—*Pseudobulbs* two to two and a half inches long, flagon-shaped. *Leaves* ten inches long by four broad, oblong-lanceolate, acuminate, about 7-nerved, margins undulate; petiole two to three inches long. *Raceme* three to five-flowered; peduncle, bracts, ovary and back of the sepals covered with minute black dots; bracts on the green peduncle and at the base of the ovary one to two inches long, boat-shaped, obtuse, dirty yellow; ovary two inches long, grey. *Flowers* six inches long from the tips of the reflexed sepals to that of the lip. *Sepals* three inches long, lateral nearly orbicular, obtusely cuspidate, pale grey dorsally, ventrally dull yellowish, and covered with scattered annular pale rose-colrd. spots one-eighth of an inch in diameter, with dark red irregular crenulate borders; dorsal sepal rather narrower, arched over the column, margins recurved. *Petals* nearly as long as the sepals, obovate-oblong, obtusely cuspidate, spotted like the sepals. *Lip* as long as the sepals, pendulous, fleshy, curved with a double flexure, pale neutral-tint with dark purple spots; hypochile sub-quadrate, saccate at the base, and with three smooth ridges in front; sac fimbriate within; epichile as long as the hypochile, tripartite; lateral segments curved like horns; terminal broadly orbicular-ovate, suddenly narrowed into an obtuse cusp. *Column* as long as the lip, spotted with purple, narrowly winged from the middle upwards, top bicuspidate. *Anthers* shortly obtusely beaked. *Pollinia* narrowly pyriform, about as long as the strap; gland ovate-oblong.—*J. D. H.*

Fig. 1, Top of column; 2, anther; 3 and 4, pollinia:—*All enlarged*; 5, *reduced* fig. of whole plant.

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Tab. 7453.

DENDROBIUM Hildebrandii.

Native of Burma.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Swartz.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Eudendrobium) *Hildebrandii*; caule elongato robusto compresso sulcato flexuoso basi folioso, foliis lineari-oblongis inæqualiter obtuse 2-lobulatis coriaceis deciduis, vaginis persistentibus papyraceis, racemis pluribus axillaribus 3–4-floris decurvis, pedunculis brevibus, bracteis brevibus tubulosis pedicello appressis, pedicellis cum ovariis 1½-pollicaribus, floribus 3½ poll. diam., sepalis petalisque patulis lineari-oblongis subtortis obtusis v. apiculatis, labello late tubæformi incurvo longiore quam lato primulino tubo dorso gibbo pubescente, limbo explanato cordato marginibus erosulis, disco velutino, mento brevi conico obtuso, anthera pubescente margine fimbriata.

D. Hildebrandii, *Rolfe in Kew Bulletin* (1894), p. 182, and in *Orchid. Review*, vol. iii. (1895), p. 49, *cum. Ic. Gard. Chron.* (1895), vol. ii. p. 93, f. 18.

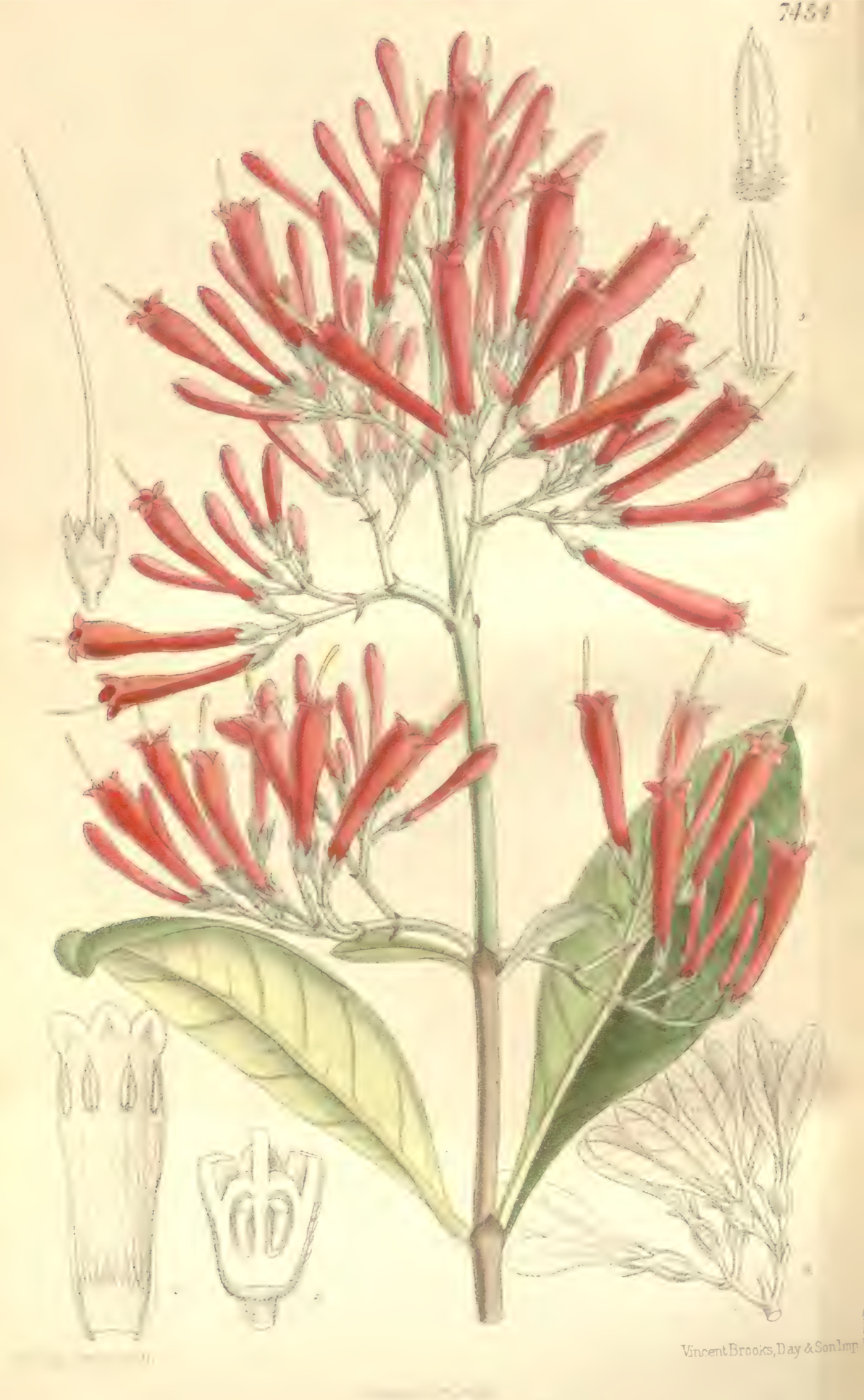
A native of the mountainous Shan States in East Burma, where it was discovered at an elevation of 1500 ft. by H. H. Hildebrand, Esq., in 1893, who sent living specimens to Messrs. Hugh Low & Co. of Clapton. It is said to grow in huge masses, upon one of which its discoverer counted one thousand five hundred blossoms. Mr. Rolfe considers it to be most nearly allied to *D. signatum*, Reichb. f., a native of the neighbouring country, Siam, and which belongs to the type of the genus most familiar to Indian botanists. In colour the flowers of *D. Hildebrandii* vary considerably, and Mr. Watson informs me that the one here figured is the palest that he has seen. Mr. Hildebrand collected specimens with three varieties of colour; one with sepals and petals pale green, and lip sulphur-yellow; another with sepals and petals creamy pink, and the lip yellow, and a third like the last, but with two dark chocolate blotches in the throat.

The specimen figured was obtained from Messrs. Low. It flowered in the Royal Gardens in May of the present year.

Descr.—*Stem* twelve to eighteen inches long by upwards of half an inch broad, compressed, flexuous, deeply groved,

yellow green; internodes about an inch long, clothed for half their length with the white papery sheaths of the old leaves, which are edged with brown. *Leaves* on young stems four to six inches long, linear-oblong, tip obliquely obtusely 2-lobulate. *Racemes* many, axillary, decurved, three to four-fld.; peduncle very short, green, half immersed in the sheaths; bracts tubular, closely appressed to the pedicels, obliquely truncate, white; pedicel with ovary one and a half to two inches long, slender, curved, white or pale pink. *Flowers* three and a half inches across the petals. *Sepals and petals* subsimilar, linear-oblong, obtuse or apiculate, and more or less twisted. *Lip* shortly trumpet-shaped, incurved, sulphur or primrose-yellow, fading to white round the margins; tube pubescent externally, gibbous dorsally; limb cordate in outline, with recurved erose margins, disk velvety; mentum short, broadly conical, obtuse. *Anther* hemispheric, pubescent, with a fringed anterior margin.—*J. D. H.*

Fig. 1, Side and front view of column; 3, anther; 4, pollinia:—*All enlarged.*



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Tab. 7454.

ALBERTA magna.

Native of Natal.

Nat. Ord. Rubiaceæ.—Tribe Albertæ.

Genus Alberta, *E. Mey.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 109.)

Alberta *magna*; frutex v. arbor fere glaberrima, ramulis teretibus, foliis obovato-oblongis obtusis integerrimis coriaceis lucidis in petiolum brevem crassum angustatis, costa valida, nervis utrinque 8–10 gracilibus, stipulis interpetiolaribus triangularibus acutis diu persistentibus, paniculis amplis terminalibus puberulis ramis oppositis inferioribus deflexis, bracteis minutis persistentibus, floribus erectis, calycis parvi lobis ovatis 2 ceteris majoribus demum accrescentibus, corollæ pollicaris coccineæ tubo superne paullo inflato lobis parvis triangularibus, antheris sessilibus dorso hirsutis, calycis fructiferi lobis 2 foliaceo-dilatatis obovato-spathulatis reticulatis.

A. magna, *E. Mey. in Linnæa*, vol. xii. (1838) p. 258. *Harv. & Sond. Fl. Cap.* vol. iii. p. 15. *Harv. Thes. Cap.* t. 45.

Alberta is a small South African and Madagascar genus, founded by Meyer in 1838 on the species here represented. It was named in honour of Father Albertus Grotus, a Dominican Friar, afterwards Bishop of Cologne. He was born in Swabia about the year 1200, and being reputed a prodigy of learning and genius, the epithet Magnus was conferred on him by his contemporaries. *Alberta* belongs to a group of *Rubiaceæ* containing seven genera, all African, and chiefly tropical. *A. magna* forms a shrub or small tree in the rocky mountains of Natal, at elevations of 3–5000 ft., where it forms a conspicuous and beautiful object from the glossiness of its evergreen leaves, and the beauty of its flowers. There are specimens in the Herbarium of Kew from Inanda (Gerrard), from precipices of the Great Noodsberg Mt. (Wood); and from the Kakloof Falls (Scott). It was discovered by Drege in 1832, "between Omsancaba and the great waterfall."

A. magna was raised in the Royal Gardens, Kew, from seeds sent in 1889 by Mr. Medley Wood, A.L.S., Curator of the Botanical Gardens, Natal. Mr. Watson informs me that it flowered for the first time in February, 1895,

and that this was in the Temperate House, where it grows freely, and promises to form a large laurel-like shrub.

Descr.—An evergreen shrub, or small tree, attaining thirty feet in height; branches terete, bark pale. *Leaves* four to five inches long, obovate-oblong, obtuse, quite entire, narrowed into a short stout petiole, coriaceous, bright green and glossy above, paler beneath; midrib stout, lateral nerves slender; stipules triangular, acuminate, brown. *Panicle* terminal, strict erect, subpyramidal, six inches high, and nearly as broad at the base; rachis stout, and spreading or decurved opposite branches puberulous; bracts very small, ovate, persistent; pedicels one-sixth to one-fourth of an inch long, erect or ascending. *Flowers* erect. *Calyx* small, pubescent; lobes erect, ovate, subacute, two longer than the others. *Corolla* an inch long, bright red; tube terete, slightly ventricose in the upper half, hairy below the middle within; lobes five, very small, triangular, recurved. *Anthers* sessile, inserted below the throat of the corolla, dorsally hirsute, bases bearded, connective apiculate. *Disk* small, tumid. *Ovary* 2-celled; style long, slender, exserted, tip contracted acutely bifid. *Fruit* a smal l2-celled ovoid deeply grooved drupe, about a quarter of an inch long, with persistent calyx-lobes, of which two are produced into spathulately obovate coriaceous veined wings about an inch long.—*J. D. H.*

Fig. 1, Calyx and style; 2, Section of corolla laid open; 3 and 4, stamens; 5, vertical section of ovary:—*all enlarged*; 6, fruit of *the natural size.*

M S del. J.N.Fitch lith.

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Tab. 7455.

GAZANIA pygmæa.

Native of South East Africa.

Nat. Ord. Compositæ.—Tribe Arctotideæ.

Genus Gazania, *Gærtn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 459.)

Gazania *pygmæa*; perennis, foliis anguste lineari-oblanceolatis obtusis integerrimis v. remote denticulatis rarius subpinnatifidis supra viridibus margines versus scaberulis, subtus tomento appresso niveis, scapis sæpius aphyllis, capitulis amplis, involucri campanulati basi plus-minusve intrusi bracteis linearibus liberis v. in tubum connatis apicibus liberis, floribus radii albis dorso medio purpureo vel violaceo fasciatis, disci aureis, acheniis filis elongatis flexuosis crinitis, pappi setis subulatis denticulatis.

G. pygmæa, *Sonder in Linnæa*, vol. xxiii. (1850) p. 69. *Harvey in Harv. & Sond. Fl. Cap.* vol. iii. p. 478. *N. E. Br. in "The Garden,"* April 27th, 1895, *cum Ic. pict.*

G. canescens, *Harv. l. c.*

G. nivea, *Leichtl. in Wien. Illustr. Gartenz.* (1894) 81, f. 21.

G. bracteata, *N. E. Br. in Gard. Chron.* (1894) vol. i. p. 620.

In a revision of some of the species of *Gazania* by Mr. N. E. Brown, contributed to "The Garden," that botanist observes of the genus, that "it is one of the most perplexing that a botanist has to deal with." It includes between twenty and thirty species, and is exclusively African in so far as at present known, and chiefly South Eastern African, though outlying species have been found as far north as Abyssinia. The chief difficulties that are encountered in the study of the species are owing to the great variability of the foliage of many, from quite entire and very narrow to pinnatifid and bipinnatifid, and in the case of *G. pygmæa* to the extraordinary diversity in the amount of confluence of the involucral bracts, from being nearly free, to forming a campanulate cup.

Gazania pygmæa has a very wide range of distribution in South Africa. It was discovered by the eminent South African traveller, Dr. Burchell, the earliest explorer of the regions it inhabits, who collected it in various localities in Bechuana and Griqua Lands, between the years 1811 and

1814, and it has since been found by many botanists and collectors at elevations of 4–5000 ft. in the Transvaal, the Orange Free State, and as far north as Matabele Land (by the Rev. W. Elliott). The earliest information I have obtained as to the date of its introduction in Europe is from specimens in the Kew Herbarium, sent by Mr. Max Leichtlin of Baden Baden in June, 1893; and in the same year by Mr. Gumbleton, who raised them from seeds sent him from Natal by Mr. Adlam. Living specimens sent by the latter gentleman flowered in the open air at Kew, and from these and others also sent by Mr. Gumbleton, the accompanying figures were made.

Descr.—*Root* fusiform, sometimes as thick as the thumb, giving off many flowering and leafing crowns. *Leaves* three to five inches long, narrowly oblanceolate, obtuse, quite entire or distantly minutely denticulate, bright green above, white with appressed wool beneath, margins recurved, sides above and surface more or less scaberulous. *Scapes* longer than the leaves, stout, pale brown or pinkish, naked, or with one reduced leaf. *Flower heads* two inches and upward in diameter. *Involucre* campanulate, glabrous, brown, base rounded or intruded; bracts linear, obtuse, confluent below and spreading above, or all confluent with a campanulate or subcylindric cup with four greenish tips. *Ray-fl.* very numerous, elliptic-oblong, obtuse, white with a broad dorsal violet or purple band. *Disk-fls.* yellow. *Achenes* clothed with long flexuous hairs. *Pappus hairs* subulate, rigid, erect, denticulate.—*J. D. H.*

Fig. A, Plants that flowered at Kew; B and C sent by Mr. Gumbleton :— fig. 1, fl. of disk; 2, achene and pappus; 3, bristle of pappus; 4, stamens :— ***All enlarged.***

Vincent Brooks, [illegible] Imp

Tab. 7456.

ASARUM maximum.

Native of China.

Nat. Ord. Aristolochiaceæ.

Genus Asarum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 122.)

Asarum *maximum*; robustum, glabrum, foliis amplis longe petiolatis late ovatis acutis basi cordatis lobis incumbentibus divaricatisve supra saturate viridibus subtus pallidis costa nervisque elevatis, floribus subsessilibus $2\frac{1}{2}$ poll. latis, perianthio basi obconico dein annulo crasso cincto, superne latissime campanulato 3-lobo, lobis rotundatis intus atropurpureis, singulis basi disco fungoso flavo lobo conformi instructis, fauce transverse rugosa purpurea, antheris subsessilibus oblongis obtuse appendiculatis, stylis brevibus connatis, stigmatibus oblongis obtuse 2-coronatis.

A. maximum, *Hemsl. in Gard. Chron.* (1890) vol. i. p. 422, and *in Journ. Linn. Soc.* vol. xxvi. (1891) 359.

The genus *Asarum* is remarkable for the very great differences it exhibits in the form of the perianth, stamens and styles, whilst preserving a great similarity in the habit of its species. *A. maximum* differs from all its allies, not only in the size of the flowers, which far exceeds (almost doubles) that of any other hitherto described species, but in the spongy cushions of the bases of the perianth-lobes, which cushions together form a three-lobed sort of crown in the centre of the flower, of a pale primrose colour, in strikng relief against the dark maroon-purple of the rest of the lobes. Another notable character is the thickened ring girdling the tube of the corolla on a level with the top of the ovary.

Referring to the four species previously figured in this work, these illustrate well the great diversities of form in the perianth of the genus, diversities so great as to suggest their being of generic nature. Thus in *A. canadense* (t. 2769) the corolla lobes are triangular and subcaudate,

the tube smooth within, the anthers shorter than their filaments, with very long caudiform tips, and the styles are united in a column 4-cleft at the top with short truncate stigmas. In *A. macranthum* (t. 7022), the very large flowers have the perianth-lobes lobulately undulate, its tube presents an inflexed curtain in the throat, above which are thickened folds like those of *A. maximum*, and below it, around the organs of fecundation, the walls are cancellated by square pits; the stamens are very short, the styles free with large capitate stigmas. In *A. caudigerum* (t. 7126) the perianth-lobes are shortly triangular, and narrowed into long flexuous tails, the surface of the tube within is quite even and hairy, the filaments long and anthers short, the styles united below, the stigmas short, simple and recurved. In *A. geophilum* (t. 7168) the mouth of the perianth is nearly closed, its tube even and setulose within, the stamens much as in *A. maximum*, and the very short styles united in pairs with linear stigmatic surfaces. Lastly, in *A. Thunbergii* (*Heterotropis asaroides*, t. 3746) the perianth and stamens are nearly of the structure of *A. macranthum*, but the style and stigmas more confluent.

Some of the above characters and others in the habits of the species have been utilized by Duchartre in his monograph of the genus (*DC. Prodr.* vol. xvi. pt. I. p. 422); but now that the genus is known to contain upwards of twenty species, of which he knew only ten, it is not surprising that his sections should require both modifications and additions. Owing, however, to the texture of the flowers which suffer much in drying, it is to cultivated specimens rather than to the Herbarium that recourse is to be had in elucidating the genus.

A. maximum is a native of China, where it was discovered by the indefatigable botanist, A. Henry, Esq., F.L.S., in the gorge of the Yang-tse Kiang river, 1000 miles from its mouth. That gentleman says of it:—"Occurs in glens about the Ichang gorge, on sides of cliffs, always some distance up. It is the Ma-ti-hsiang (i.e. horse-hoof fragrance) of the Chinese, and the root is used in medicine."

Living plants were received in 1894 from Mr. Ford,

F.L.S., Superintendent of the Botanical Gardens of Hong Kong, which flowered in a stove in the Royal Gardens, Kew, in March of the same year. Mr. Watson informs me that the flowers remained fresh on the plant for about a month.—*J. D. H.*

Fig. 1, Section of the tube of the perianth ; 2 and 3, stamens; 4, styles and stigmas :—*All enlarged.*

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CONTENTS OF No. 913, JANUARY, 1896

Tab. 7452. STANHOPEA GARLEPIANA.

„ 7453.—DENDROBIUM BILDERMANNII.

„ 7454.—ALBERTA MAGNA.

„ 7455.—GAZANIA PYGMÆA.

„ 7456.—ASARUM MAXIMUM.

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Tab. 7457.

BEGONIA umbraculifera.

Native of Brazil.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

Begonia *umbraculifera*; caulibus elatis robustis indivis, foliis apicem versus caulis alternis distichis longe petiolatis reniformibus v. orbicularibus et peltatis denticulatis, stipulis magnis ovatis caducis, cymis supra-alaribus dichotomo-multifidis, pedunculis valde elongatis basi internodio confluentibus, floribus polygamo-monoicis; *fl. masc.* sepalis 2 orbicularibus, andræcio compresso, antheris filamentis liberis longioribus; *fl. fem.* sepalis 5 ovatis 2 extimis majoribus, ovario 3-loculari, placentis integris, stylis 3 brevibus liberis, stigmatibus reniformi-2-lobis undique papillosis, capsula æqualiter 3-alata; *fl. hermaph.* perianthio stylis stigmatibusque fl. fem., similibus staminibus basi v. superficie ovarii 2–5-locularis sine ordine insertis.

A very remarkable plant in habit, and the second only (in so far as is known to me) of the vast genus to which it belongs, in which hermaphrodite flowers have been observed. The other is *B. frigida*, A.DC.* (Tab. 5760), also a native of Brazil, in which the ovary of the fem. fl. is inferior, and 3–4 quetrous, but that of the hermaphrodite fl. consists of 3–4 free superior carpels, surrounded by a few hypogynous stamens.

I have sought in vain amongst the sections of the genus established by A. De Candolle in the Prodromus, for one under which this singular plant should be placed; and I have compared it, also in vain, with all the drawings and descriptions to which I have access, in search of any species of similar habit, namely, as having a perfectly simple, stout, erect stem, with few distant distichous reniform orbicular peltate fleshy leaves, and very long-peduncled supra-axillary cymes, the peduncle of which is confluent at the base with the internode above it. Referring to the key to De Candolle's sections of the genus which I have given in "The Genera Plantarum," it falls into the last group of American ones, those with entire placentas and style-arms papillose all over, and amongst

* For observations on *B. frigida* see *Gard. Chron.* 1860, pp. 146 and 171; 1861, p. 1092, and Masters, Vegetable Teratology, pp. 199, 303.

February 1st, 1896.

these *Wageneria* is that into which may for the present be placed, though differing from that section in habit and foliage, and in having four male perianth-segments. In habit it approaches nearest to *B. dichotoma*, Jacq. Ic. t. 619.

Mr. Watson informs me that *B. umbraculifera* was imported amongst some Orchids from Brazil by Messrs. F. Sander & Co., from whom a plant was obtained in 1893, and that by far the greater majority of the flowers throughout the plant are male. It flowered in the "Begonia House" of the Royal Gardens in March, 1895.

Descr.—*Stems* six from the root, four feet high, quite simple, erect, half an inch in diameter, terete, smooth, pale brown, leafing towards the tip only, marked with narrow annular scars of fallen stipules. *Leaves* alternate, fleshy, four to six inches in diameter, lower reniform, upper peltate, obliquely orbicular, retuse, one side more or less produced into a broad, low auricle, bright pale green and glossy above, pale beneath, with eight to ten radiating nerves; margins obscurely denticulate. *Stipules* an inch long, green, caducous. *Cymes* large, supra axillary, dichotomously branched; peduncle many times longer than the petiole, confluent at the base with the internode above it, rose-colrd.; branches and short slender pedicels rose-red. *Flowers* crowded in small corymbs, chiefly male, with a few female and bisexual flowers. *Male fl.* one inch diam., ebracteate; sepals 2, orbicular, white; stamens about twenty, in a compressed bundle; anthers oblong, obtuse, longer than the quite free filaments; (very rarely an imperfect subglobose 2-celled inferior ovary is formed in the male fl.) *Fem. fl.* half an inch in diameter, bracteate; bracts subulate; sepals 5, ovate, two outer rather the largest; styles three, very short, stigmas hippocrepiform; ovary orbicular in outline, broadly equally 3-winged, wings rounded, 3-celled; placentas undivided. *Hermaph. fl.* sepals and stamens of the male, the latter surrounding and attached to the sides of a free two- to five-lobed ovary, with as many short, stout styles, and 2–3-lobed stigmas.—*J. D. H.*

Fig. A, Cyme of male flowers; B, of female and hermaphrodite flowers, both of the *nat. size*:—Fig. 1, Stamens of male fl.; 2, fem. fl.; 3, section of ovary of the same; 4, hermaphrod. fl. with sepals removed; 5, ovary from do.; 6, section of its ovary; *all enlarged*:—7, *reduced* view of whole plant.

M.S. del, J.N. Fitch lith.

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Tab. 7458.

SCUTELLARIA FORMOSANA.

Native of China.

Nat. Ord. Labiatæ.—Tribe Nepeteæ.

Genus Scutellaria, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1201.)

Scutellaria (Vulgares) *formosana*; fruticulus erectus, ramis tetragonis glaberrimis canisve violaceis, foliis breviter petiolatis ovatis v. ovato-lanceolatis acuminatis glaberrimis remote subserratis basi cuneatis subtus glanduloso-punctatis et remote pilosulis, racemo terminali erecto aphyllo laxifloro, floribus oppositis, bracteis minutis pedicellos breves subæquantibus v. brevioribus, calycis puberuli lobis late ovatis, galea parva fere orbiculari, corollæ erectæ glanduloso-pubescentis tubo $\frac{2}{3}$-pollicari infra medium gracili viridi intus annulo stellatim pubescente cincto, supra medium inflato limboque saturate violaceo, limbi labio superiore integro inferioris lobis lateralibus parvis intermedio fere orbiculari, filamentis pilosis, antherarum loculis ciliolatis, gynophori magni gibbi collo glanduloso, nuculis granulatis.

S. formosana, *N.E. Br. in Gard. Chron.* (1894) vol. ii. p 212.

Amongst the tropical Asiatic skull-caps there is one to which *S. formosana* is nearly allied, and that is *S. javanensis*, Jungh., which differs in the repand-toothed leaves, in both surfaces of these and the racemes being hispidulous in the rose-lilac or scarlet corolla, and in the fruiting calyx being much longer than that of *formosana* would (judging from immature fruit) probably be. Of *S. javanensis*, a native of Java at an elevation of about 6000 ft., I have seen only indifferent specimens. It may prove the same as a Sumatran plant in Herb. Kew (probably *S. sumatrana*, Miq.); or, as Mr. Brown has observed in his careful description of *S. formosana* cited above, all the three "may be local forms of one species; but until more is known concerning them I deem it best to retain the present plant as if distinct, it being clearly distinguishable from *S. javanensis*, and for horticultural purposes worthy of distinction."

S. formosana was, according to a specimen in the Kew Herbarium, introduced by Messrs. Veitch from Formosa. The specimen here figured is from a plant sent to the

Royal Gardens, Kew, from the Island of Hainan in Southern China, in 1894, by Mr. C. Ford, F.L.S., Superintendent of the Hong Kong Botanical Gardens. It flowers freely in a cool greenhouse in early summer.

Descr.—*Stem* two to three ft. high, sparingly branched, tetragonous, quite glabrous or hoary with a minute pubescence, pale violet-blue. *Leaves* two and a half to three inches long, shortly petioled, ovate or ovate-lanceolate, acuminate, faintly distantly serrate, quite glabrous, base cuneate, dark green and shining above, pale green or violet beneath, covered with minute glandular dots, and a few very short scattered hairs; nerves six or eight pairs; petiole one-sixth to one quarter of an inch long. *Raceme* terminal, lax-fld., flowers subsecund, opposite, very shortly peduncled; bracts very small, green, about as long as the very short pedicels; rachis, bracts, pedicels and calyx puberulous. *Calyx* small, lobes short, triangular, obtuse; galea small, orbicular. *Corolla* an inch long, glandular-pubescent, tube narrow and green below the middle, surrounded above the base within by a band of stellate hairs, above the middle ventricose and dark violet-blue; upper lip hooded quite entire; lower 3-partite, lateral lobes small rounded, mid-lobe orbicular. *Filaments* sparsely hairy; anthers didymous, puberulous. *Gynophore* globose, gibbous, contracted into a short neck which is girt with glands. *Nucules* granulate.—*J. D. H.*

Fig. 1, Portion of under-surface of leaf; 2, calyx, pedicel and bract; 3, corolla laid open; 4 and 5, anthers of median, and 6, of lateral stamens; 7, disk and ovary; 8, portion of fruiting raceme; 9, nucule;——*All enlarged*, except 8, which is of *nat. size*.

M.S.del, J.N.Fitch lith.

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Tab. 7459.

STERNBERGIA MACRANTHA.

Native of Western Asia.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Sternbergia, *Waldst. et Kit.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 721.)

Sternbergia *macrantha*; cormo globoso magno tunicis exterioribus membranaceis brunneis, foliis hysteranthiis vernalibus loratis obtusis suberectis glaucescentibus obscure carinatis, floribus autumnalibus luteis inodoris, pedunculo brevi occulto, spatha membranacea univalvi inferne cylindrica apice fissa, perianthii tubo cylindrico elongato, limbi lobis oblongis subacutis tubo longioribus, staminibus limbo duplo brevioribus, fructu oblongo, seminibus globosis.

S. macrantha, *J. Gay in Balans. Plant. Orient. Exsicc.* 1855, No. 827. *Baker Handb. Amaryll.* p. 33.

S. Clusiana, *Boiss. Fl. Orient.* vol. v. p. 148, *non Ker.*

S. stipitata, *Boiss. et Haussk. Fl. Orient.*, vol. v. p. 148.

S. grandiflora, *Boiss. in Kotschy Plant. Cilic. Exsicc.* No. 344.

S. latifolia, *Boiss. et Haussk. Pl. Orient. Exsicc.* 1867.

This is much the finest of all the Sternbergias, and although it is widely distributed in a wild state, extending from Smyrna eastward to the west of Persia, and southward to Jerusalem and the Sinaitic peninsula, it has only been recently introduced into cultivation. From the familiar *S. lutea* it differs in its larger flowers, long perianth-tube, and the leaves being produced in spring, instead of with the flowers in autumn. At Kew it was received in a living state for the first time in 1894 from Mr. E. J. Whittall of Smyrna, to whom the Royal Gardens are indebted for so many rare and interesting bulbous plants. It has grown successfully, both in a sheltered border, in the open air, and in pots in a cool conservatory. It is so fine a plant that no doubt it will become generally popular.

Descr.—*Corm* large, globose; outer tunics membranous, brown, extending three or four inches above its neck. *Leaves* about eight in a rosette, produced in spring, lorate, obtuse, suberect, finally a foot long, and nearly an inch broad. *Peduncle* short, hidden inside the

produced outer corm-tunics, always one-flowered. *Spathe* white, membranous, three or four inches long, cylindrical in the lower half. *Flowers* bright yellow, inodorous, produced in autumn. *Perianth-tube* slender, about two inches long; limb three inches long; lobes oblong, subacute. *Stamens* inserted at the throat of the perianth-tube, half as long as the lobes; anthers linear, dorsifixed. *Style* reaching to the tip of the anthers. *Capsule* oblong, an inch and a half long. *Seeds* subglobose.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, apex of style:—*All enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 7460.

HECHTIA argentea.

Native of Mexico.

Nat. Ord. Bromeliaceæ.—Tribe Pitcairnieæ.

Genus Hechtia, *Klotzsch*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 667.)

Hechtia *argentea*; acaulis, foliis perpluribus dense rosulatis ensiformibus rigide coriaceis recurvatis utrinque dense persistenter argenteo-lepidotis e basi ad apicem acuminatum sensim attenuatis aculeis marginalibus magnis corneis pallidis, pedunculo elongato, foliis bracteiformibus multos ovato-lanceolatis integris scariosis adpressis, floribus in glomerulos multis globoses sessilos aggregatis, bracteis primariis parvis ovatis scariosis, bracteis floriferis ovatis brunneis scariosis flori subæquilongis, sepalis ovatis acutis, petalis oblongis obtusis albis calyce vix longioribus, floribus femineis ovario ovoideo, stigmatibus tribus sessilibus falcatis, staminibus rudimentariis.

H. argentea, *Hort. Beaucarne*; *K. Koch Wochenschrift*, 1864, p. 176. *Baker in Bot. Mag.* sub t. 6554; *Handb. Bromel.* p. 139.

Hechtia is distinguished from all the other genera of *Bromeliaceæ* by its small white subunisexual flowers. About ten species are now known, all of which inhabit Mexico and the Southern United States, and can be easily grown in a cool conservatory. The present plant, with its dense tufts of persistent silvery leaves, is the most striking of all of them, and often attracts the attention of the visitors to the Cactus House at Kew, where this same plant has lived for at least a quarter of a century. It grows slowly, and flowers but rarely. It flowered first in 1870, and the present drawing was partly made then, and was finished in 1895. The first notice I can find of the plant is of its being exhibited by M. Beaucarne at the International Horticultural Exhibition at Brussels in 1864. There are no wild specimens in the Kew Herbarium.

Descr.—*Leaves* very numerous, forming a dense sessile rosette, recurved, ensiform, acuminate, rigidly coriaceous, narrowed gradually from the base to a long point, persistently silvery on both surfaces, reaching a length of two or three feet, armed with copious pungent, pale, horny,

marginal prickles. *Peduncle* three feet long, furnished with many adpressed entire scariose ovate-lanceolate bract-leaves. *Flowers* subunisexual, aggregate in many globose sessile clusters; branch-bracts ovate, not longer than the clusters; flower bracts ovate, brownish, about as long as the flowers. *Sepals* ovate, one-sixth of an inch long. *Petals* white, oblong, obtuse, spreading, little longer than the calyx. *Ovary* large in the female flowers, with three spreading stigmas, and at its base six rudimentary stamens. —*J. G. Baker.*

Fig. 1, 2, A complete flower; 2, corolla cut open, to show the ovary and rudimentary stamens; 3, horizontal section of ovary, *all enlarged*; 4, entire plant, *much reduced.*

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Tab. 7461.

BIFRENARIA TYRIANTHINA.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Bifrenaria, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 546.

Bifrenaria *tyrianthina*; pseudobulbis magnis ovoideis trigonis subcancellatis, folio sessili elliptico-oblongo, pedunculo valido 3–5-flora decurvo, bracteis spathaceis tubulosis brunneis, pedicellis crassis, floribus amplis rubro-purpureis, marginibus sepalorum et petalorum subcrispatis, sepalis oblongo-rotundatis dorsali erecto, lateralibus dorsali multo majoribus latioribusque ope pedis columnæ in mentum fere bipollicarem rectum obtusum connatis, petalis sepalo dorsali paullo minoribus subtrapezoideo-obovatis retusis basi cuneatis, labello sepalis multo minore tubo infundibulari, lobis lateralibus rotundatis, terminali lato revoluto intus pilis albis hirsuto, callo tubo incluso crasso carnoso subclavato hirsuto apice truncato, columna brevissime in pedem elongatum hirsutam producta, polliniarum stipitibus liberis.

B. tyrianthina, *Reichb. f. Xenia*, vol. i. p. 61 and 223. *Regel Gartenfl.* vol. xiii. (1864) p. 4, t. 422. f. 2. *Rolfe in Lindenia*, vol. x. t. 446.

B. Dallemagnei, *Hort. Linden.*

Lycaste tyrianthina, *Lodd. Cat. ex Loud. Hort. Brit. Ed.* 1850, *Suppl.* p. 582.

Maxillaria tyrianthina, *Hort. ex Baxt. in Loud. l. c. Josst, Beschr. u. Cult. Orchid.* p. 272.

The history of *Bifrenaria tyrianthina* has been given by Mr. Rolfe in "Lindenia," cited above. It was introduced by Messrs. Loddiges from Brazil about sixty years ago, and according to Loudon appears in one of Loddige's catalogues as a *Lycaste*, but in which of the catalogues (there were several of the plants of that celebrated nursery) does not appear, nor can I find it in any to which I have access. There is a specimen of it in Lindley's Herbarium (now at Kew) ticketed as from "Mr. Hedges, the Castle, Wallingford," without date, but obtained probably not long after its introduction. Lindley supposed it to be a purple flowered variety of *B. inodora*, Lindl. (*B. fragrans*, Rodrig.) to which it is very nearly allied; but according to Mr. Rolfe, besides the difference of colour of the flowers, the lip is more velvety, the callus more truncate, and the mentum longer and stouter. A further difference is that *B. inodora*, though so named by Lindley, is said by Rod-

rigues to be very fragrant, and was subsequently named *B. fragrans* by the latter author. The resemblance of the flowers to those of *B. Harrisoniæ* (*Maxillaria Harrisoniæ*, Lindl. (see Tab. 2927) is very strong, in all but the colour of the sepals and petals which in that plant are of a pale brown. Amongst other differences are the pollinia, which in *B. Harrisoniæ* are subsessile on a very short broad 2-fid strap.

The plant here figured was obtained in 1893 from the establishment of M. Linden, "L'Horticulture Internationale," under the name of *Bifrenaria Dallemagnei*. It flowered in a cool house in the Royal Gardens, Kew, in June, 1895.

Descr.—*Pseudobulbs* three inches long by two and a half broad, ovoid, compressed, trigonous, the sides marked with many shallow depressions, top dark brown. *Leaf* about six inches long, by two to three broad, sessile, elliptic —oblong, suberect, dark green, many-nerved. *Scape* decurved, then ascending, very stout, about three-fld., green, streaked with brown; sheaths few, and spathaceous bracts brown; pedicel with ovary two inches long, green. *Flowers* three inches broad across the sepals, nearly three and a half from the tip of the dorsal sepal to that of the mentum, red purple; margins of sepals and petals obscurely crimped. *Dorsal sepal* broadly oblong, erect; lateral much broader, rounded, connate at their bases with the long hairy foot of the column, forming a straight, spur-like mentum an inch and a half long. *Lip* much smaller than the sepals, stoutly clawed, three-lobed; tube funnel-shaped; lateral lobes rounded, erect; mid-lobe short, very broad, revolute, undulate, bright red purple, clothed with white hairs; callus forming a very stout, broad hairy cushion between the lateral lobes and ending in a truncate boss. *Column* very short. *Pollinia* each on a straight columnar strap, which is seated on an oblong, retuse gland.—*J. D. H.*

Fig. 1, Lip with one side-lobe removed; 2, column and mentum; 3, anther-cap; 4, pollinia:—*All enlarged.*

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CONTENTS OF No. 611, FEBRUARY 1896.

7457.—[illegible]

7458.—SCUTELLARIA FORMOSANA.

7459.—STERNBERGIA MACRANTHA.

7460.—HECHTIA ARGENTEA.

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Tab. 7462.

INCARVILLEA Delavayi.

Native of China.

Nat. Ord. Bignoniaceæ.—Tribe Tecomeæ.

Genus Incarvillea, *Juss.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1049.)

Incarvillea *Delavayi*; glaberrima, caule brevi erecto robusto, foliis pedalibus lineari-oblongis pinnatis, rachi valida, foliolis suboppositis remote 8–10-jugis sessilibus lanceolatis obtusis crenato-lobulatis supremis confluentibus, nervis subtus validis, scapo elongato robusto nudo apicem versus plurifloro, bracteis setaceis, floribus magnis breviuscule pedicellatis, calycis tubulosi alte 5-costati puberuli dentibus acuminatis, corollæ rosaeæ tubo 2-pollicari curvo, limbi 3-poll. diam. lobis rotundatis margine undulatis, antherarum loculis glabris.

I. Delavayi, *Bur. & Franch. in Morot Journ. Bot.* (*Paris*), (1891), 39. *Rev. Hortic.* 1893, p. 544, fig. 173. *Journ. Hortic. Ser.* 3, vol. xxx. p. 449, f. 1. *Gartenflor.* vol. xliii. (1894), t. 1398. *Baillon Histoire des Plantes*, vol. x. p. 52.

This superb species of the central Asiatic genus *Incarvillea* was discovered by the Abbé Delavay in pastures of the lofty mountains of Yunnan in West China, at elevations of 8000–11,500 ft. It was first published by the authors cited above in a paper on the plants of Tibet and China, chiefly collected by Prince Henri d'Orléans, during his and M. Bonvalet's adventurous journey across Central Asia. In the same paper the authors give diagnoses of eight species from the same region, which, with those previously described, makes ten now known, whereas at the date of the publication of the *Bignoniaceæ* in the "Genera Plantarum" (1876), the genus consisted but of one. The only species previously figured in this work is *I. Koopmanni*, Lauche (Tab. 6593), a native of Turkestan; as to which the late Dr. Regel informed me by letter that I was right in my supposition as to its being only a variety of *I. Olgæ*, Reg.

The plant of *I. Delavayi* from which the accompanying figure is made, was received from Mr. Max Leichtlin of Baden Baden, in 1894, and flowered in a cool greenhouse of the Royal Gardens in May, 1895. Handsome as it

is it falls far short of the magnificence which the plant attains, for Mr. Thompson of Ipswich informs me that it flowers with him in an open border much more luxuriantly than in a house, one specimen having two scapes with nine and ten leaves, and twelve to thirteen flowers respectively, and that it withstood the cold of last winter (1895) without the slightest protection.

Descr.—*Rootstock* stout, lobed. *Stem* very short, simple, or very sparingly branched. *Leaves* few, radical, twelve to eighteen inches long, pinnate; rachis stout, nearly terete; leaflets six to eight rather distant pairs or fewer, four to five inches long, sessile, subopposite, lanceolate, subacute, spreading and decurved, unequal-sided, coarsely unequally crenate or lobulate, midrib strong, lower margin, sometimes slightly decurrent, terminal more or less confluent; petiole as long as the blade. *Scape* as long as the leaves or longer, erect; as thick as a goose-quill, naked, three- to thirteen-fld.; bracts small, lanceolate; pedicels half an inch long. *Calyx* an inch long, tubular-campanulate, green, five-angled and -lobed, puberulous; lobes shorter than the tube, ovate-lanceolate, acuminate. *Corolla* bright rose-red; tube three inches long, decurved, glabrous within, base within the calyx cylindric, above it slightly inflated; limb three to three and a half inches broad, lobes rounded, margins undulate, recurved. *Stamens* included, filaments glabrous; anthers glabrous, cells divaricate, dorsally spurred. *Disk* cupular. *Ovary* cylindric; style included, stigma large, peltate. *Capsule* one and a half to two inches long, tetragonous, valves corrugated. *Seeds* flattened, broadly obovate, winged, rugose.—*J. D. H.*

Fig. 1. Portion of calyx laid open, showing the disk and ovary; 2, base of corolla laid open with stamens; 3 and 4, anthers:—*All enlarged.*

M.S. del, J.N[illegible]ch lith.

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Tab. 7463.

COMANTHOSPHACE japonica.

Native of Japan.

Nat. Ord. Labiatæ.—Tribe Satureineæ.

Genus Comanthosphace (*Spenser Moore in Lond. Journ. Bot.* vol. xv. (1877), p. 293.)

Comanthosphace *japonica*; suffruticosa, ramulis tetragonis inflorescentiaque plus minus cano-tomentosis, foliis petiolatis ovatis ovato-lanceolatisve gro-se serratis, verticillastris multifloris in racemum strictum erectum bracteatum dispositis, bracteis amplis membranaceis rotundatis concavis rostratis v. acuminatis caducissimis, floribus breviter pedicellatis flavidis, calycis tubulosi enervis dentibus brevissimis obtusis, corollæ puberulæ tubo exserto intus annulo pubescente cincto, limbi lobis 2 posticis brevibus rotundatis erectis, lateralibus paullo majoribus, antico duplo majore hemispherico deflexo, staminibus deflexis, filamentis glaberrimis, antheris minutis globosis, disco annulari, nuculis oblongis truncatis glandulosis.

C. japonica, barbinervis, sublanceolata & stellipila, *Sp. Moore, l. c.*

Pogostemon japonicus, *Benth. in Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1180.

Elsholtzia japonica, barbinervis, sublanceolata, & stellipila, *Miquel Ann. Mus. Lugd. Bat.* vol. ii. p. 103 (*Prolus. Japon.* p. 35). *Franch. & Sav. Enum. Pl. Japon.* vol. i. p. 364.

The genus *Comanthosphace* was established upon four species of Japanese plants, first described under *Elsholtzia* by Miquel, and subsequently referred (as one species, on the authority of Maximovicz) to *Pogostemon* by Bentham. That the affinity of *Comanthosphace* is with *Pogostemon* is, I think, unquestionable, as is shown in the structure of the anthers, but it differs from all species of that genus in the form of the corolla, which is 5-lobed, and strongly bilabiate, with a prominent hemispheric lower lip, whereas in *Pogostemon* the corolla limb is nearly equally 4-fid. As Mr. Moore observes, *Comanthosphace* approaches *Elsholtzia* in the form of the corolla which is somewhat two lipped in that genus; but there is a wide difference between them in this organ, and a still wider in the anthers, those of *Elsholtzia* being ovoid or oblong, and distantly 2-celled, and the cells 2-valved, while in *Comanthosphace*, as in *Pogostemon* they are subglobose, imperfectly 2-celled, and 2-valved. In his description of the genus Mr. Moore, by

oversight no doubt, describes the flowers as obscurely bracteate, but the bracts are very large, as shown in the figure; they are, however, very caducous.

Comanthosphace japonica was raised at the Royal Gardens from seeds sent by Professor Sargent, Director of the Harvard Arboretum, Massachusetts, in 1893: plants raised from which flowered in the open air in the Kew Arboretum in October, 1894.

Descr.—A small undershrub, with hoary branches and inflorescence. *Stem* 4-gonous. *Leaves* three to five inches long, ovate-lanceolate, acuminate, serrate, dark green and subrugosely reticulated above with sunk nerves, pale beneath with raised nerves, base narrowed into a short stout channelled petiole. *Spikes* terminal, strict, erect, very shortly peduncled; rachis stout; flowers very shortly pedicelled in small bracteate verticillasters, about half an inch long; bracts half an inch long, orbicular or ovate, concave, beaked, very caducous, pale brown. *Calyx* tubular-campanulate, 5-toothed, green. *Corolla* very small, yellow, tube cylindric, girt within with a pubescent ring, lobes small; upper lip obtusely 4-toothed; lower projecting, orbicular, concave. *Stamens* 4, filaments very long, far exserted, subequal, glabrous; anthers minute, 1-celled, 2-valved. *Disk* annular. *Nucules* truncate. *Style* long, exserted, stigma 2-fid.—*J. D. H.*

Fig. 1, Flower; 2, corolla laid open with stamens; 3 and 4, top of filaments with anthers; 5, disk and ovary:—*All enlarged.*

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Tab. 7464.

DIPODIUM paludosum.

Native of the Malayan Peninsula.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Dipodium, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 539.)

Dipodium *paludosum*; caule stricto robusto erecto, foliis distichis erecto-patentibus strictis ensiformibus acutis carinatis, vaginis equitantibus costatis, scapo elongato erecto, racemo laxifloro, bracteis parvis ovatis, ovario elongato, floribus longiuscule pedicellatis albis (intus pallide) purpureo maculatis, sepalis petalisque consimilibus lineari-oblongis obtusis patulis demum reflexis, labello sepalis æquilongo anguste lanceolato subcymbiforme acuto basi v. altius bidentato conduplicato intus marginibus costaque medio villosis dorso glabro, columna brevi crassa lateribus rotundatis antice basin versus excavatum pubescente, anthera parva terminali, polliniis segregatim ope caudicularum glandulæ magnæ orbiculari affixis, caudiculis pone pollinia calcaratis.

D. paludosum, *Reichb. f. Xen. Orchid.* vol. ii. p. 15; *in Walp. Ann.* vol. vi. p. 648. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 19.

Grammatophyllum paludosum, *Griff. Notul.* vol. iii. p. 344; *Ic. Pl. Asiat.* t. 323.

Wailesia paludosa, *Reichb. f. in Bonpland* (1854), p. 93.

Dipodium is one of a few remarkable genera of Orchids in which the species are divisible into two groups of absolutely opposite mode of growth, habit, foliage and inflorescence, but of similar floral structure. It was established by Brown on an Australian leafless plant, with fleshy roots, and no other stem but a scaly flowering scape; to which was added by Reichenbach two Malayan plants with the habit of that here figured. Except some slight difference in the pollinia, and in the length of the column, that of the leafless species being much longer than of the leafy, I can point out no character beyond that of habit to distinguish these two forms generically. Another species, *D. pictum*, Reichb. f., a native of the Malayan Peninsula, but first described from Java, has an elongate, scandent, epiphytic stem, from a terrestrial root. It is the *Leopardanthus scandens* of Blume, and, like *D. pictum*, has flowers blotched, in this case with crimson. Should the two forms of the genus be dissociated in name, *Leopardanthus* should be taken for the leafy forms, having precedence by one year (1848) over *Wailesia*,

which Lindley proposed (*Journ. Hort. Soc.* iv. (1849) 262; *Paxt. Mag. Bot.* xvi. 321, with fig.) for the plant described by Blume.

D. paludosum is a native of marshes in the Malayan Peninsula. There are specimens of it in the Kew Herbarium from Griffith, who was its discoverer (in or about 1841), and Perak ones from Wray. Griffith found it growing in similar localities to those frequented by several species of *Nepenthes*, *Hypericum* and *Lycopodium cernuum*.

The specimen here figured was sent in 1893 from the Royal Gardens of Glasnevin, Dublin, by their keeper, F. W. Moore, A.L.S., to Kew, where it flowered in July, 1895, in a stove.

Descr.—Whole plant two to three feet high. *Stem* erect, rooting at the base, stout, simple or sparingly branched, densely leafy. *Leaves* strict, erecto-patent, ten to twelve inches long, by an inch broad, ensiform, subacute, distichous, coriaceous, channelled above, keeled beneath, bright green, margins recurved, articulate upon the short green sheath which is very strongly ribbed. *Scape* axillary, twelve to sixteen inches long with the raceme which occupies half its length, erect, terete, smooth, green; sheaths appressed. *Flowers* loosely racemed; bracts very small, ovate, brown. *Peduncle* with ovary about an inch long, white, spreading. *Perianth* two inches in diameter, very pale straw colour, or nearly white, with small purple blotches in the backs of the sepals and petals, which are faintly seen in front. *Sepals* and *petals* similar, linear-oblong, spreading and recurved, subacute, rather fleshy. *Lip* as long as the petals, elongate cymbiform, two-toothed at the base (the teeth represent lateral lobes); tip acuminate, recurved; base within and margins broadly villous, dorsally glabrous, with rows of purple blotches. *Column* very short and stout, pubescent in the deeply concave front. *Anther* small. *Pollinia* oblong, each seated on a rather stout pedicel, which is prolonged into a dorsal spur, and at the base is inserted on a large orbicular gland.—*J. D. H.*

Fig. 1, Lip; 2, column; 3 and 4, pollinia:—*all enlarged*; 5, reduced view of whole plant.

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Tab. 7465.

MASSONIA JASMINIFLORA.

Native of Orange Free State.

Nat. Ord. Liliaceæ.—Tribe Allieæ.

Genus Massonia, *Thunb.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 806.)

Massonia *jasminiflora*; foliis binis synanthiis patulis humifusis suborbicularibus lævibus glabris viridibus verticaliter multistriatis, floribus albis suaveolentibus in umbellam centralem sessilem dispositis, pedicellis brevissimis, bracteis membranaceis albis apice viridibus exterioribus ovatis perianthii tubo brevioribus, perianthii tubo subcylindrico, lobis ovato-lanceolatis patulis tubo duplo brevioribus, staminibus lobis brevioribus, filamentis linearibus basi connatis, antheris oblongis parvis.

M. jasminiflora, *Hort. Burchell*; *Baker in Journ. Linn. Soc.* vol. xi. p. 390.

This genus *Massonia*, which was named by Thunberg in commemoration of the botanical explorer, David Masson, is entirely confined to Cape Colony. About thirty species are now known, but they are very rarely seen in cultivation. The present plant was discovered at the beginning of the century by the celebrated traveller Burchell, but up till now it has only been known from a single specimen dried from his garden at Fulham in 1818, and preserved, like the rest of his Cape and Brasilian plants, in the Kew Herbarium. It was sent alive to the Royal Gardens in 1892 by the Rev. F. O. Miles of Almonbury, Bristol, who had received it from the Orange Free State. All the species of the genus agree closely in general habit. This one belongs to a small group in which the stamens are shorter than the perianth-lobes. It is probable that it is the plant upon which Salisbury founded his genus *Podocallis*.

Descr.—*Bulb* ovoid, tunicated. *Leaves* two to a bulb, spreading on the surface of the ground, suborbicular, minutely cuspidate two or three inches long and broad, glabrous, smooth, dull green, with about fifteen distinctly marked vertical ribs. *Umbel* sessile in the centre of the two leaves, many-flowered; pedicels very short; bracts ovate, small, membranous, white, tipped with green. *Perianth* white; tube subcylindrical, half an inch long;

lobes ovate-lanceolate, spreading, half as long as the tube. *Stamens* inserted at the throat of the perianth-tube, rather shorter than the lobes; filaments linear, connate at the base; anthers oblong, small. *Ovary* ampullæform, narrowed gradually into the short style.—*J. G. Baker.*

Fig. 1, Bract; 2, flower, cut open; 3, front view of anther; 4, back view of anther; 5, pistil; 6, horizontal section of ovary :—*All enlarged.*

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Tab. 7466.

UTRICULARIA JANTHINA.

Native of Brazil.

Nat. Ord. Lentibularieæ.

Genus Utricularia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 987.)

Utricularia (Oligocista) *janthina*; folio longe petiolato reniformi integerrimo undulato, scapo 6--8-floro petiolo longiore, bracteis tripartitis pedicellis elongatis multoties brevioribus, laciniis lanceolatis intermedio longiore, floribus amplis, sepalis subæqualibus cymbiformibus obtusis, corollæ pallide violaceæ labio superiore hemispherico inferiore bilabellato labello superiore erecto rotundato **valde** convexo faseiis 2 aureis verticalibus instructo, inferiore multo majore dilatato **transverse oblongo lateribus** rotundatis medio plicato, calcare elongato incurvo plica labelli incluso apice exserto, ovario ovoideo, stigmate 2 labiato labio superiore parvo acuto inferiore amplo plicato.

U. **janthina**, *Hook. f.*

The nearest allied species of *Utricularia* to *U. janthina* is *U. reniformis*, St. Hil., and I long hesitated before venturing to regard the former as anything but a variety, differing notably in the colour of the flowers, those of *U. reniformis* being described as rose-colrd., with two darker lines on the palate; observations which must have been made on the living plant by the author, who was also the discoverer of the species. Nor is it easy to reconcile the characters of the corollas of the two plants, that of *reniformis* being described as having the upper lip truncate emarginate, the lower 3-lobed, the lateral lobes broad, the mid-lobe much shorter, and hardly produced. In all other respects the two plants seem to agree in botanical characters. They also inhabit the same country, the Province of Minas Geraes in Brazil; but they differ remarkably in choice of conditions under which they were respectively found, for *U. reniformis* is described as inhabiting sphagnous swamps, and *U. janthina* the axils of the leaves of a *Vriesia*, probably *V. Glaziovii*.

Mr. Sander, by whom *U. janthina* was introduced into England, informs me that this and *U. longifolia*, Gardn., both grow on Vriesias, and are very difficult of importation,

for they require that water should frequently be poured over them during the voyage. Also that the Central American and Roraima (Guiana) species are comparatively much easier of importation.

Plants of *U. jandhina* were received at Kew from Messrs. Sander in 1892. Mr. Watson informs me its first formed leaves were twice as large as those here figured. It flowered for the first time in Europe in a stove in the Royal Gardens, in July, 1895, the scape being eighteen inches long.

Descr.—*Leaves* two to four inches in diameter, reniform, quite entire, undulate, suddenly contracted at the cordate base into a slender dull red petiole four to six inches long, pale green on both surfaces: nerves flabellate, very obscure. *Scape* twice as tall as the petiole, green, about six-flowered, naked, except for one to two lanceolate, green bracts about half an inch long. *Flowers* racemed; pedicels slender, one to one and a quarter inches long; bracts much shorter than the pedicels, erect, herbaceous, green, three-cleft; lobes lanceolate, lateral half as long as the central. *Sepals* two, subequal, boat-shaped, obtuse, herbaceous, green. *Corolla* pale blue; upper lip hemispheric, arching over, and enclosing the upper labellum of the lower lip, which is rounded, convex, with two vertical golden bands edged with dark violet, lower labellum much larger, very broad, transversely oblong, one and a half inches broad, quite entire, folded down the middle, sides rounded; spur elongate, incurved, lodged in the fold of the labellum, and protruded shortly beyond it. *Ovary* ovoid, produced into a short, stout style, which is dilated into a lobed stigma, with a short, incurved, spur-like upper lobe, and a broad, undulate lower one.—*J. D. H.*

Fig. 1, Portion of lower lip of corolla, with stamens; 2, ovary:—*Both enlarged.*

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TAB. 7462.—INCARVILLEA DELAVAYI.

7463.—[illegible] PILEA AMBIGUA.

7464.—DIPODIUM PALUDOSUM.

7465.—MASSONIA JASMINIFLORA.

7466.—UTRICULARIA JANTHINA.

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Tab. 7467.

POSOQUERIA macropus.

Native of Brazil.

Nat. Ord. Rubiaceæ.—Tribe Gardenieæ.

Genus Posoqueria, *Aubl.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 83.

Posoqueria *macropus*; ramulis petiolis foliis subtus paniculæ ramis calycibusque pubescentibus, foliis breviter petiolatis ovatis acutis v. acuminatis supra læte viridibus inter nervos profunde impressos tumidis, subtus pallidis nervis prominulis, stipulis triangularibus acutis v. longe acuminatis, panicula breviter pedunculata multiflora, bracteis minutis, calycis lobis brevibus obtusis, corollæ tubo 5-pollicari, ore villoso, limbi alabastro-erecti ovoidei lobis pollicaribus lineari-oblongis apice rotundatis sinistrorsum contortis, antheris lineari-oblongis connectivo crasso, loculis margine pilosulis, stigmate bicruri cruribus recurvis glandulosis pilosis.

P. macropus, *Mart. in Flora*, xxiv. (1841) *Beibl.* II. p. 79. *Mart. Fl. Bras.* vol. vi. pt. vi. p. 336, t. 140, f. 1.

P. multiflora, *Lemaire Illustr. Hortic.* vol. xvi. (1869) t. 597.

Posoqueria is a tropical American genus, which is described as having the limb of the corolla when in inclined and gibbous; but this is not the case in *P. macropus*, nor in several other species which I have examined. All are shrubs or small trees, most of them with large glossy very coriaceous leaves. *P. macropus* is one of the only two described species in which the leaves are pubescent beneath. The other is *P. palustris*, Mart., with narrowly oblong leaves, and subcoriaceous calyx-lobes.

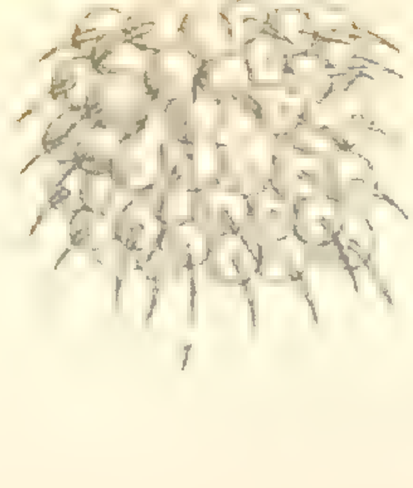
P. macropus was described by Martius in 1841, with the habitat and collector's name of "Minas ?, *Schück*." In his great "Flora Brasiliensis," cited above, the additional habitats are given of S. Brazil, and Campos of Rio de Janeiro, *Glaziou*. More recently it has been found in the Province of Sta. Catharina, by M. Gautier, who sent plants of it to Messrs. Verschaffelt of Ghent, when it was published as *P. multiflora*, by Lemaire. It is fairly well figured in the "Flora Brasiliensis," but evidently from a poor dried specimen; the corolla lobes are represented as too narrow, and the hairs at the mouth are omitted, otherwise the figure is very characteristic.

April 1st, 1896.

The plant has been for many years in cultivation in the Royal Gardens, Kew, having in all probability been obtained from Messrs. Verschaffelt's establishment, one of the oldest surviving correspondents of the Royal Gardens of Kew. It forms a bush in a tropical house three to four feet in height, flowering in May. The flowers are very fragrant.

Descr.—A much-branched bush; branchlets, leaves beneath, petioles and branches of the panicle hispidulously pubescent. *Leaves* four to five inches long, shortly petioled, ovate or ovate-oblong, subacute, dark green and glossy above, swollen between the eight to ten pairs of deeply sunk nerves, paler beneath with raised nerves; base rounded; margins recurved; *stipules* triangular, brown, acute, or acuminate. *Panicle* many-flowered, very shortly peduncled; branches short, opposite; bracts minute; pedicels short, stout. *Calyx* hispidulous, one-sixth of an inch long; tube hemispheric; lobes 5, short obtuse. *Corolla* pure white; tube five inches long, quite glabrous, slender, not or obscurely dilated towards the summit, limb oblong and erect in bud, with the lobes overlapping to the left, five-partite, lobes spreading and recurved, linear-oblong, convex, tip rounded; mouth villous with white cellular hairs. *Stamens* five, inserted at the mouth of the corolla, erect; filaments very short, glabrous; anthers linear-oblong, margins of the cells villous. *Ovary* two-celled, crowned with a fleshy disk; ovules many; style very long, filiform; stigma of two revolute, narrow, hispid lobes.—*J. D. H.*

Fig. 1, Calyx and style; 2, vertical section of calyx and ovary; 3. portion of limb and upper part of tube laid open; 4 and 5, stamens:—*All enlarged.*



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Tab. 7468.

HYPOCYRTA PULCHRA.

Native of New Grenada.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Hypocyrta, *Mart.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1010.)

Hypocyrta *pulchra*; tota hirtula, caule erecto robusto annulato, foliis petiolatis ovatis subacutis basi rotundatis v. sub-cordatis serrulatis, supra fusco-viridibus bullatis setulosis (setulis albidis tuberculis globosis insertis) nervis arcuatis utrinque 10–12 pallidioribus, subtus rubris nervis nervulisque prominulis hirtellis reticulatis, petiolo terete valido, pedunculis solitariis axillaribus petiolis longioribus erectis validis superne incrassatis, sepalis amplis late ovatis cinnabarinis costa valida, corolla calyce duplo longiore ampullæformi hirsuta, tubo basi gibbo flavido, ore constricto, lobis 5 parvis cinnabarinis recurvis, staminibus 4, filamentis superne tortis basi dilatatis et in vaginam postice fissam basi corollæ insertam confluentibus, antheris didymis, disco erecto postico, ovario hirsuto, stylo glabro.

H. pulchra, *N. E. Br. in Gard. Chron.* (1894) vol. ii. p. 244; *in Kew Bulletin*, 1895, App. II. p. 44.

Of the eighteen or twenty known species of *Hypocyrta*, none equal *H. pulchra* in brilliancy of colouring. Some idea of the more usual appearance presented by the species may be gained by a reference to two published in this magazine, *H. strigillosa*, Mart. t. 4047, and *H. glabra*, Hook. t. 4346. These, like *H. pulchra*, are plants of erect habit with opposite leaves, solitary axillary flowers, large sepals, and an urceolate more or less gibbous corolla with a constricted mouth and small recurved lobes. All have the filaments dilated at the base and confluent in a broad lamina. Of two other plants published in this magazine as belonging to *Hypocyrta*, one, *H. gracilis*, Mart., belongs to the genus *Codononthe*, Hanst., and the other, *H. leucostoma*, Hook., to *Besleria*.

The nature of the very short pubescence of the upper surface of the leaves of *H. pulchra* is very curious (see fig. 1). The whole epidermis is covered with close-set minute globose papillæ each surmounted by a short bristle.

Hypocyrta pulchra is a native of New Grenada, whence it was imported by Messrs. J. Veitch & Sons, from whom the plant figured was obtained. It flowered in a stove of the Royal Gardens in June, 1895.

April 1st, 1896.

Descr.—*Stem* very stout, erect, columnar, five inches high, and half an inch in diameter in the specimen figured, annulate, with minute buds at the lower nodes, dull grey green below, clouded with pale brown, vinous red above, and minutely pubescent. *Leaves* four to five by three and a half inches, ovate, subacute, base cordate, rather fleshy, serrulate; upper surface bullate, dull green, clouded with brown, and clothed with tubercle-based setulæ; beneath vinous-red hispidulous, lacunose, midrib pale above; nerves about twelve pairs, arching, sunk above, very prominent beneath, with prominent reticulating nervules; petiole about half an inch long, very stout, vinous red. *Flowers* axillary, solitary. *Pedicels* one to one and a half inch long, erect, stout, pubescent, rather thickened upward, scarlet. *Sepals* half an inch long, ovate-cordate, erect, pubescent, scarlet. *Corolla* nearly an inch long, urceolate, hirsute except at the glabrous base, pale yellow; mouth constricted, lobes very short, broadly ovate, recurved, scarlet. *Filaments* dilated below, and confluent in a deep lamina. *Disk* oblong, placed behind the ovary. *Ovary* pubescent; style glabrous; stigma capitate, hispidulous.—*J. D. H.*

Fig. 1, Superficial papillæ and hairs of the leaf: 2, corolla; 3, base of corolla and stamens; 5, ovary and disk:—*All enlarged.*

M S del, J N Fitch lith.

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Tab. 7469.

OLYRA concinna.

Native of Costa Rica.

Nat. Ord. Gramineæ.—Tribe Paniceæ.

Genus Olyra, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 1110.)

Olyra *concinna*; gramen nanum, dense cæspitosum, glaberrimum, culmis filiformibus simplicibus decurvis pendulisque foliosis, foliis omnibus conformibus confertis distichis parvulis ovatis cuspidato-acuminatis inæquilateris basi rotundatis marginibus ciliolatis, costa tenui, nervis creberrimis, vaginis lamina multoties brevioribus apice 2-auriculatis, auricula altera longius producta, ligula brevi rotundata, spicis axillaribus et terminalibus brevibus, rachi filiformi stricta, spiculis 3, fem. 2 brevissime pedicellatis majusculis altera basi altera apice racheos elongatæ inserta, masc. solitaria minuta basi spicæ inserta longe pedicellata: *spic. masc.*: gluma solitaria oblonga obtusa 1-nervi, palea glumæ æquilonga binervi, staminibus 3, lodiculis 3 minimis; *spic. fœm.*: glumis 3, I et II lanceolatis acuminatis 3-nerviis herbaceis, III paulo breviore breviter stipitata obtusiuscula coriacea pallida marginibus involutis, palea glumæ fere æquilonga, lodiculis 3 ovato-rotundatis, ovario in stylum elongatum capillarem angustato, stigmatibus 2 brevibus.

O. concinna, *Hook. f.*

Olyra is rather a large genus of tropical grasses, all except one or two African, being American. It is remarkable for the great variety it displays in habit, foliage, inflorescence, and sexuality of the spikes, and in the forms of the spikelets and their glumes, which has necessitated the lengthy description given above. The majority of the species are tall, often branched, or even suffruticose plants, with broad, flat, coriaceous leaves often petioled on their sheaths; but a few are of the humble growth of *O. concinna*. Amongst the latter I find none described to which *O. concinna* could be referred, but there is in the Kew Herbarium a flowerless specimen of a species which, if not the same, must be very closely allied to it. This last differs in having rather longer and narrower leaves, and somewhat hairy leaf-sheaths; it was found by Dr. Traill, F.R.S. (now Professor of Botany at Aberdeen) in the Rio Jarua, an affluent of the Upper Amazons river, in 1874. Of the described species the nearest in habit and foliage to *O. concinna* is *O. polypodioides*, Trin. (Doell in Mart. Fl. Bras. ii. ii. 327,

t. 45, f. 1), which, with similar habit, differs totally in inflorescence and spikelets.

O. concinna arrived at the Royal Gardens, Kew, in 1891, in a box of filmy-ferns, sent by Mr. C. Winkle, from San José in Costa Rica. It flowered in January, 1895, and forms a very elegant evergreen pot-plant.

Descr.—A dwarf, densely tufted, perennial grass, quite glabrous. *Stems* six to ten inches long, filiform, at first erect, then decurved and drooping, clothed with leaves, except the erect basal portion. *Leaves* an inch long, uniform in disposition and form throughout the stems, distichous, sessile in the very short sheaths, almost imbricating, ovate, cuspidately acuminate, unequal-sided, striate with close-set nerves, midrib faint, base rounded, margins ciliolate, dark green above, often at length rufous towards the tips, pale beneath; sheaths slightly compressed, mouth unequally two-auricled, ligule short, rounded. *Spikes* rather shorter than the leaves, terminal and axillary; peduncle enclosed in the leaf-sheaths and rachis very slender, strict, rigid, compressed. *Spikelets* three, two fem. and one male. *Fem. spikelets* very distant, one at the top, the other half an inch below it at the base of the spike, lanceolate, about half an inch long; gl. I and II herbaceous, lanceolate, acuminate, 3-nerved, margins incurved, III shortly stipitate, coriaceous, margins involute; palea like the gl., but rather shorter and narrower. *Lodicules* 3. *Style* very long and slender, stigmas short. *Male spikelets* solitary in a long filiform pedicel inserted at the base of the lower fem. spikelet; very minute; gl. solitary, 1-nerved; stamens 3, with 3 minute lodicules at their bases.—*J. D. H.*

Fig. 1, Leaf and spike; 2, male spikelet; 3, its glume; 4, stamens and lodicules; 5, fem. spikelets with gl. I removed; 6, palea; 7, stipes of gl. III with lodicules and style and stigmas; 8, lodicule:—*All enlarged.*

M S del. J N Fitch

Tab. 7470.

CATASETUM Randii (*Masc.*).

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Catasetum, *Rich.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 537.)

Catasetum (Myanthus) *Randii* (Masc.); pseudobulbis oblongis, foliis oblongo-lanceolatis acuminatis, scapo ascendente plurivaginato vaginis brevibus obtusis, racemo masculo erecto multifloro; *floribus masculis* 2½ poll. latis, sepalis petalisque subconsimilibus patentibus lanceolatis acutis subundulatis marginibus incurvis pallide viridibus purpureo-maculatis, labello parvo infero trilobo, lobis lateralibus brevibus fimbriatis, basi inter lobos laterales crista compressa erecta lamellata lamellis fimbriatis instructo, lobo terminali angusto lineari porrecto basi dilatato et dorso tumido-marginibus fimbriatis, dein integro apice truncato denticulato, disco basin versus setis elongatis penicillato, columna clavata tereti, antennis deflexis incurvis, anthera longe rostrata, polliniis obovoideis, caudicula lineari, glandula orbiculari *floribus fœm.* subglobosis, sepalis petalisque oblongis recurvis, labello supero urceolari hemispherico, columna brevissima crassa rostrata.

C. Randii, *Rolfe in Kew Bulletin*, 1894, p. 394; 1895, App. II. p. 36.

Mr. Rolfe, who first distinguished and published this species, observes that its nearest, and indeed very near ally, is (as a reference to the figures at t. 7069 of this magazine shows) *C. Garnettianum*, Rolfe, a native also of the Amazons. Indeed, except from its much larger size, more spotted perianth, and the far more complicated appendages of the lip, *Randii* might be regarded as an exaggerated and more highly developed form of *Garnettianum*, which suggests that intermediates connecting them may be discovered. The pollinia of the two are identical. Under the above cited plate I have described the affinities of *Garnettianum* with its other allies, to which I must refer for information on this point in respect of *C. Randii*. I have in the same article given Mr. Rolfe's sections of the genus *Catasetum*, founded on their sexuality and the position of the lip; where these dicœcious species with deflexed antennæ on the male column, an anticous lip of the male, and a posticous lip of

the female, form the section *Myanthus*. This, of course, includes both *Randii* and *Garnettianum*.

The drawing of the male plant here reproduced, was made from a specimen sent by E. S. Rand, Esq., of Para, to whom the Royal Gardens are also indebted for *C. Lemosii*, Rolfe, figured at Tab. 7444. It arrived in 1894, and flowered in a stove in March, 1895. Figure 5, representing a female flower, was drawn from a specimen preserved in alcohol, also sent by Mr. Rand. The precise habitat of both is the Upper Amazons, above Manaos.

Descr.—MALE PLANT. *Pseudobulbs* about four inches long, oblong, obtuse, compressed, sulcate. *Scape* four to five inches long, ascending, stout, with four to five short tubular obtuse sheaths. *Raceme* many-fld., inclined, flowers rather crowded, about two and a half inches broad. *Bracts* lanceolate, lower half an inch long; pedicels with ovary spreading, about twice as long as the bracts. *Sepals* spreading, lanceolate, acute, with incurved margins, rather flexuous, pale apple-green, with small transverse, purple-brown spots. *Petals* like the sepals, erect, with recurved tips. *Lip* not half as long as the sepals, three-lobed; lateral lobes short, broad, deeply fimbriate, with a large erect lamellate and fimbriate crest on the disk of the lip between them; mid-lobe longer than the lateral, dilated and fimbriate on each side towards its base, then linear, truncate and crenate at the tip, base with a large dorsal rounded knob, disk towards the base with a brush of long fleshy filaments. *Column* stout, terete, speckled with purple, beaked at the tip; antennæ deflexed, and a little incurved. *Anther* long-beaked. *Pollinia* obovoid, caudicle linear; gland orbicular.—FEM. PLANT; flower subglobose; sepals and petals linear-oblong, revolute; lip posticous, pitcher-shaped; column very short and stout, cuspidate.—*J. D. H.*

Fig. 1, Lip; 2, column of male; 3 and 4, pollinia; 5, fem. flower:—All but fig. 5 *enlarged*.

M.S del, J.N.Fitch lith.

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Tab. 7471.

PHALERIA AMBIGUA.

Native of Java.

Nat. Ord. Thymelæaceæ.—Tribe Phaleriæ.

Genus Phaleria, *Jack.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 199.)

Phaleria *ambigua*; arbuscula scandens, glabra, ramulis teretibus fuscis, foliis breviter petiolatis ellipticis apice cuspidato-acuminatis base acutis, nervis utrinque ad sex, nervulis gracillimis, supra saturate subtus pallide viridibus, capitulis axillaribus et pseudo-terminalibus sessilibus multi-densifloris, involucri foliolis ovato-oblongis obtusis viridibus, floribus albis flavo pallide suffusis puberulis, perianthii tubo ¾-pollicari gracili superne vix ampliato, limbi lobis ⅓-pollicaribus late ovatis apice rotundatis, staminibus 8, filamentis filiformibus glabris v. ima basi puberulis lobis perianthii longioribus 4 fauci 4 ore corollæ insertis erectis antheris parvis connectivo dorso glanduloso.

Drymispermum ambiguum, *Meissn. in DC. Prodr.* vol. xiv. p. 605. *Miquel Fl. Ind. Bat.* vol. i. p. 886.

D. lancifolium, *Zoll. Cat. Verz.* vol. ii. p. 117.

The species of *Phaleria* are extremely difficult of discrimination, from Herbarium specimens especially, and the Javanese botanists have, in the magnificent Botanical Gardens and Herbarium of Buitenzong, the only full materials for the elucidation of its Malayan members. One has been figured in this work, *P. laurifolia*, Benth., Tab. 5787, *Drymispermum laurifolium* (Decne.), from a plant received from the Botanical Gardens of Ceylon, and which came from Buitenzorg, under the latter name; though its correctness is far from satisfactorily established, as pointed out by Bentham in the "Flora Australiensis" (vol. vi. p. 38). *P. ambigua*, here figured, was sent, so named, to the Royal Gardens, Kew, from those of Buitenzorg in 1894, but it does not altogether agree with Meissner's description of that plant, which has an eight-flowered head, and nine to fifteen pairs of nerves in the leaf, characters of relative importance probably, and not specific. In so far as I can ascertain from the published descriptions and Herbarium specimens, the plant here figured (whether or no rightly named) differs from all other

hitherto described. Upwards of twenty species of the genus are known, all, with the exception of an Indian one, natives of the Malayan Archipelago, Australia, and the Pacific Islands; some of them under the generic name of *Drimyspermum*, Reinwardt (altered to *Drymispermum* by Reichenbach) all agree in the short involucral leaves, numerous flowers in a head, broadly ovate pubescent perianth-lobes, and perhaps also in the climbing habit, which last character, however, I do not find to be attributed to the genus, or to any described species of it except *P. ambigua*.

The Royal Gardens, Kew, are indebted to Dr. Treub, Director of the Buitenzorg Botanical Gardens, for many interesting plants, including the above, which flowered in a stove in May of the present year, and was, like its allies the Daphnes, deliciously fragrant.

Descr.—A climbing, glabrous shrub, branches terete, bark brown. *Leaves* four to five inches long, shortly petioled, elliptic, cuspidately acuminate, base acute, light green above, pale and yellower beneath, nerves about six pairs, rather slender. *Heads* of twelve to fifteen flowers, axillary, and subterminal; involucral bracts ovate, obtuse, herbaceous, green. *Perianth* pure white, or faintly flushed with dull yellow, minutely pubescent; tube three-quarters of an inch long, slender, hardly dilated upwards; limb as broad across the broadly ovate obtuse lobes. *Stamens* eight, four inserted in the throat of the perianth, and four at the mouth; filaments rather longer than the perianth-lobes, slender, erect, faintly pubescent at their insertion; anthers all reaching the same level, very small, broadly oblong; connective dorsally thickened and glandular. *Disk* crenulate. *Ovary* very small, ovoid, style slender; stigma nearly on a level with the anthers, very large, depressed-capitate.—*J. D. H.*

Fig. 1, Upper part of perianth laid open, with stamens *in situ*; 2 and 3, front and back view of anther; 4, disk and pistil:—*All enlarged.*

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CONTENTS OF No. 616, APRIL, 1896.

TAB. 7467.—POSOQUERIA MACROPUS.
„ 7468.—HYPOCYRTA PULCHRA.
„ 7469.—OLYRA CONCINNA.
„ 7470.—CATASETUM RANDII (*Masc.*).
„ 7471.—PHALERIA AMBIGUA.

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Late Director of the Royal Botanic Gardens of Kew

LONDON:

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Tab. 7472.

OSTROWSKIA magnifica.

Native of Central Asia.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Ostrowskia; (*Regel in Act. Hort. Petrop.* vol. viii. (1884) p. 686, t. 1.)

Ostrowskia *magnifica*; radice tuberoso, caule 3–5-pedali simplici robusto fistuloso, foliis breviter petiolatis verticillatis ovatis dentatis, floribus amplis in racemum terminalem pauciflorum dispositis erectis, calycis tubo turbinato sulcis per paria limbi laciniis alternantibus instructo, limbi lobis 5–9 lineari-lanceolatis, corolla late campanulata, tubo 15–24 costato, lobis 5–9 brevibus latis, staminibus 5–9, filamentis brevibus basi dilatatis et pilosis, antheris lineari-elongatis demum tortis, ovario 5–9-loculare, stylo crasso, stigmatibus 5–9 linearibus recurvis primum in columnam fusiformem cohærentibus, capsula pergamenea turbinata poris lateralibus magnis oblongis dehiscente, seminibus ovoideis compressis anguste alatis.

O. magnifica, *Regel Descr. Pl. Nov. fasc.* ix. (1884) p. 46, t. 1. *Gartenfl.* vol. xxxvi. (1887) p. 639, fig. 160. *André Rev. Hortic.* (1888) p. 344, f. 72; (1893) p. 343. *Gard. Chron.* (1888) vol. ii. p. 65, f. 6. *Illustr. Hortic.* vol. xxxv. t. 71. *Journ. Hortic. Ser.* III. vol. xxvii. 1893, p. 535. *Le Jardin* (1888) p. 175.

This stately plant is one of the many botanical discoveries in Central Asia made by Albert, son of the late Dr. de Regel, so long the able and energetic Director of the Imperial Botanical Gardens of St. Petersburgh. During a long residence in Western Turkestan, where he served in the Imperial Army, and made some remarkable exploratory journeys, the then young Albert Regel devoted himself with great success to enriching the collections under his father's charge, and *Ostrowskia* is one of the most striking of the results of his labours. Its precise locality is the Khanat of Dharwar in Eastern Bokhara, where it was found at an elevation of 7000 ft. above the sea.

Botanically *Ostrowskia* is almost too closely allied to *Campanula*, from which it is distinguished by the whorled leaves, the numerous divisions of the calyx and lobes of the corolla of the cells of the ovary and stigmas, and by the pores of dehiscence of the capsule being double the sepals in number. *Ostrowskia*, as Dr. de Regel states, commemorates

the services of an illustrious patron of science, N. ab Ostrowsky.

The drawing of this noble plant was made from a specimen kindly communicated by F. Ducane Godman, Esq., F.R.S., in whose rich garden at South Lodge, Horsham, it flowered in June, 1895. It was one of eight stems about five feet high, borne on the same plant. Plants of it had flowered in the Rock Garden of Kew some years previously, and in many continental gardens.

Descr.—A tall, strict, stout, erect, glabrous herb. *Root* tuberous. *Stem* four to five feet high, as thick as a goose-quill, quite simple, terete, pale green speckled with red-brown. *Leaves* in distant whorls of four to five, except the lowest, which are opposite, four to six inches long, ovate, acute, toothed, narrowed into a short winged petiole, pale green, subrugose above; midrib and five to six pairs of nerves prominent beneath. *Flowers* three to six, in a terminal corymbiform raceme; pedicels stout, erect, terete, bracteate at the base and middle; bracts small, lanceolate, acute, withering. *Flowers* erect, very large, four inches across the mouth of the corolla. *Calyx-tube* turbinate, with a pair of oblong parallel depressions between the lobes; lobes two inches long, linear-lanceolate, acuminate, green, spreading and recurved. *Corolla* broadly campanulate, pale lilac; tube two inches long, terete, with three ribs opposite each lobe; lobes very short, broadly triangular, broader than long, spreading and recurved. *Stamens* as many as the calyx lobes, very short; filaments short, flat, suddenly dilated into a fleshy, hairy, tumid base; anthers very narrow, half an inch long, at length twisted. *Ovary* 5–9-celled, style very stout, short, pubescent; stigmas 5–9, at first coherent in a fusiform column. *Capsule* turbinately pyriform, crowned with the calyx-lobes, dehiscing, by 10–24 lateral pores. *Seeds* ovoid, compressed, narrowly winged—*J. D. H.*

Fig. 1. Flowers with corolla removed, the anthers withered, and tumid bases of the filaments shrunk; 2, stamens:—*Both enlarged.*

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Tab. 7473.

PITTOSPORUM ERIOCARPUM.

Native of the Himalaya.

Nat. Ord. Pittosporeæ.

Genus Pittosporum, *Banks*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 131.)

Pittosporum *eriocarpum*; arbor parva, ramulis subverticillatis, foliis junioribus et inflorescentia floccoso-tomentosis, foliis ovatis oblongis v. oblongo-obovatis obtusis acutisve basi cuneatis utrinque tomentosis supra demum glabratis costa subtus nervisque utrinque 12–15 validis, paniculis ad apices ramulorum corymbosis breviter pedunculatis multifloris, floribus breviter pedicellatis, sepalis ovatis ovato-lanceolatisve tomentosis, corollæ flavæ petalis in tubum sepalis quadruplo breviorem cohærentibus, ovario tomentoso, capsula globosa tomentosa polysperma, valvis lignosis.

P. eriocarpum, *Royle Illustr. Bot. Himal.* p. 77. *Hook. f. Fl. Brit. Ind.* vol. i. p. 199. *Brandis, For. Flor. N.W. Ind.* 19.

Pittosporum, *Wall. Cat.* n. 8129, 8131.

Solanum? *Wall. Cat.* n. 9074.

The genus *Pittosporum* contains not a few handsome shrubs and small trees that, but for the winter cold of England, should thrive in our gardens. Of these only four, as appears from the "Handbook of the Kew Arboretum," have as yet been introduced into Kew, and proved more or less hardy. They are the long established *P. Tobira*, Ait., of China and Japan (Plate 1396); *P. crassifolium*, Soland. (Plate 5978) which flourishes in the south-west of England, and especially in the Scilly Islds.; *P. undulatum*, Vent. of S.W. Australia; and *P. tenuifolium*, Banks and Sol. of New Zealand, which is certainly the hardiest of the four, as it well may be, from its inhabiting the whole length of the New Zealand islands as far south as Otago.

P. eriocarpum is a native of the Western Himalaya in the provinces of Kumaon and Garwhal, at elevations of 3000–5000 ft. Of the ten Indian species it is the only one that may prove hardy in this country, especially if the seeds were obtained from plants at the highest level of its range. Of the twelve or more New Zealand species there

are several of the mountain regions of the Southern Island, that might succeed in England.

The specimen here figured of *Pittosporum eriocarpum* was sent to be named at the Herbarium of the Royal Gardens, Kew, by Thos. Hanbury, Esq., F.L.S., from his celebrated garden of the Palazzo Orengo, La Mortola; and there was no difficulty in identifying it with the above named Himalayan plant. The flowers were rather heavily sweet-scented.

Descr.—A small tree, ten feet high or more; branches spreading, more or less whorled; branchlets, young leaves and panicles covered with a white flocculent deciduous tomentum that adheres for some time along the midrib and nerves of the leaves above. *Leaves* three to six inches long, shortly petioled, very variable in shape from obovate-oblong to ovate-lanceolate, narrowed to an obtuse tip, coriaceous, at length glabrous and dark green above, beneath pubescent, with a pale brown tomentum; midrib and twelve to fifteen pairs of nerves strong beneath; petiole half an inch long, stout. *Flowers* in terminal panicles that are corymbosely collected at the extremities of the branches, golden yellow, sweet-scented. *Panicles* two to three inches long, shortly peduncled; branches and branchlets short, stout, tomentose; bracteoles at the base of the pedicels minute. *Sepals* ovate-lanceolate, subacute, tomentose, three-fourths shorter than the corolla-tube. *Corolla-tube* a third of an inch long; lobes ovate, recurved, not half as long as the tube. *Filaments* glabrous; anthers linear, red-brown. *Ovary* tomentose, style stout. *Capsule* half an inch in diameter, globose, woody, many-seeded, crowned with the persistent style.—*J. D. H.*

Fig. 1, Flower with the corolla removed; 2 and 3, stamens; 4, ovary; 5, transverse section of do.:—*All enlarged*; 6, capsules from the Herbarium, of the *natural size*.

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Tab. 7474.

COCHLIODA Noezliana.

Native of Peru.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Cochlioda, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 560.)

Cochlioda *Noezliana*; pseudobulbis confertis ovoideo-oblongis compressis rugulosis, folio sessili lineari-oblongo obtuso carinato, scapo suberecto plurivaginato, racemo elongato nutante laxe multifloro, bracteis pedicellis duplo brevioribus, floribus 1–1¼ poll. latis roseis, sepalis late ovatis acutis, dorsali erecto, lateralibus recurvis v. fere revolutis, petalis angustioribus oblanceolatis rectis, labello sepalis breviore, ungue erecto columnæ adnato, lobis lateralibus rotundatis reflexis, lobo medio obcordato deflexo, disco callis 2 lineari-oblongis instructo, columna leviter incurva, clinandrio membrana angusta 3-loba circumdato, anthera subhemispherica obscure rostrata, polliniis oblongis stipite crassiusculo obovato, glandula depressa postice appendiculata.

C. Noezliana, *Rolfe in Lindenia*, vol. vi. (1891) p. 55, t. 266. *Orchidophile* (1892) 272 (Noetylana). *Rev. Hortic. Belg.* vol. xviii. (1892) p. 49, t. 5. *Werner Orchid. Alb.* vol. xi. t. 509. *Gartenfl.* (1894) t. 1403. *Gard. Chron.* (1894) vol. ii. p. 71, fig. 11. *Veitch Man. Orchid. Pt.* ix. p. 187.

Odontoglossum Noezlianum, *Hort. ex Gard. Chron.* (1892) vol. ii. p. 570, 602. *Journ. des Orchid.* vol. i. p. 294.

The characters and limits as then known of the genus *Cochlioda* were first accurately determined by Bentham, and laid down by him in the "Genera Plantarum," where, to the solitary species on which Lindley founded the genus, five are added, most of them taken out of *Mesospinidium* and *Odontoglossum*. Three of these have been already figured in this work as *Odontoglossum roseum*, Lindl. (Plate 6084); *Mesospinidium sanguineum*, Reichb. f. (Plate 5627); and *M. vulcanicum*, Reichb. f. (t. 6001). All are natives of Peru or Ecuador, and all, including *C. Noezliana*, are in cultivation at Kew.

C. Noezliana was discovered by Mr. John Noezli, and sent by him in 1891 to Messrs. Linden, by whom it was distributed. It has also been independently introduced into England by Messrs. Charlesworth, Shuttleworth and Company, who informed Messrs. Veitch that it was collected in Northern Peru, near the locality in which *C. vulcanica* is found. The latter plant was discovered by Spruce in 1871, on the volcanic mountain of Tunguragua,

where it grows amongst the scoriæ of the crater at 10,000–11,000 ft. elevation. The specimen of *C. Noezliana* here figured was purchased at an auction sale in London, and flowered in a cool house of the Royal Gardens in July, 1895.

Descr.—*Pseudobulbs* clustered, one and a half inch long, oblong, compressed, dark blueish green, wrinkled. *Leaf* solitary, three to four inches long by nearly one broad, linear-oblong, narrowed at the base, but not petioled, obtuse, dorsally keeled, bright green above, paler beneath. *Scape* six inches long or more, slender, inclined, purplish green, with many lanceolate sheaths about half an inch long. *Raceme* six inches long, inclined or drooping, loosely many-fld.; bracts lanceolate, not half the length of the pedicels, which are half to three-fourths of an inch long. *Flowers* an inch and a quarter in diameter, dark rose-red, suffused with golden-yellow on the tip. *Sepals* free, broadly ovate, dorsal erect, lateral recurved, almost revolute. *Petals* narrower, oblanceolate, spreading. *Lip* shorter than the sepals; claw adnate to the column, limb deflexed, lateral lobes rounded, recurved, midlobe obcordate; disk with two parallel linear-oblong golden-yellow calli. *Column* elongate, arched; clinandrium broad, girt with a narrow 3-lobed crest or wing. *Anther* hemispheric.—*J. D. H.*

Fig. 1, Front view of column and lip; 2, back view of do.; anther; 4 and 5, pollinia:—*All enlarged.*

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Tab. 7475.

COFFEA stenophylla.

Native of Sierra Leone.

Nat. Ord. Rubiaceæ.—Tribe Ixoreæ.

Genus Coffea, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 114.)

Coffea *stenophylla*; foliis breviter petiolatis ovato- v. oblongo-lanceolatis oblanceolatisve obtuse caudato-acuminatis glaberrimis lucidis nervis gracilibus axillis glandulosis, stipulis triangulari-ovatis acuminatis, floribus axillaribus et terminalibus brevissime pedicellatis, bracteis linearibus, calycis margine brevissimo eroso, corollæ tubo lobis 6–10 linearibus stellatim patentibus multo breviore, staminibus 6–10 filamentis brevibus erectis, antheris elongatis lineari-subulatis baccis globosis.

C. stenophylla, *G. Don Gen. Syst. Gard.* vol. iii. p. 581. *Hiern, in Oliver, Fl. Trop. Afric.* vol. iii. p. 182. *Kew Bulletin*, 1893, p. 167.

C. arabica, *Benth. in Hook. Niger Flora*, p. 413, *in part.*

Coffea stenophylla is an interesting plant, as being one of the two * indigenous West African species which, in point of commercial value, may prove a formidable rival of the Arabian. It was discovered by Afzelius upwards of a century ago; but was not published till 1834, when G. Don described it from specimens collected by himself at Sierra Leone. It was regarded by Bentham, perhaps rightly, in the "Niger Flora" as a variety of *C. arabica* (Plate 1303). The following notice of its occurrence in West Africa is extracted from the report of Mr. G. F. Scott Elliott, F.L.S., on the Botany of the Sierra Leone district traversed by the Anglo-French Boundary Commission in 1892, issued by the Colonial Office, and reproduced in the *Kew Bulletin l. c.*

"*Coffea stenophylla*, the narrow-leaved 'wild,' 'bush,' or 'native Coffee,' is sometimes found wild in the hills, and is more often cultivated than the Liberian. It grows very freely, and appears to yield quite as much as the Liberian, but is somewhat longer in coming into bearing.

---

* *C. liberica*, Bull.; Hiern, l. c.

Both the natives and French traders at Freetown say that it has a superior flavour, and prefer it to the Liberian. In fact, latterly a certain amount has been exported to a wholesale French dealer, who is said to sell it at 4 frs. 50 cents. a lb. as 'best Mocha.' Considering that it is worth at Freetown 6*d.* a lb. this should be a fairly profitable trade, and a trial shipment should be made by the English merchants to find out exactly what the market value in Liverpool would be. The plant appears to thrive best in the higher hills about Sierra Leone on gneissose or granitic soil, and can be grown at from 500 to 2000 ft."

Mr. Scott Elliott's specimens are of a very slender state, with lanceolate leaves only two to two and a half inches long by one-third of an inch to two-thirds of an inch broad, very different from that here represented, and these together favour the opinion entertained by Bentham, that both are forms of *C. arabica*, Linn.

Coffea stenophylla was raised at the Royal Gardens, Kew, from seeds sent in May, 1894, by Sir W. H. Quayle Jones, late Chief Justice of the West African Settlements, and acting Governor of Sierra Leone, and the plant here figured was raised therefrom, and flowered as early as September, 1895, in a tropical house. Supplies of the seed have been distributed from Kew to the Botanical Gardens of India and the Colonies, from whence, if the plant resists the coffee disease, and proves to be as excellent a coffee as the French merchants declare it to be, good results may be expected.

Descr.—An evergreen shrub, or small tree, up to twenty ft. high, perfectly glabrous, with brownish bark, and green, terete branches; youngest leaf-shoots and leaves pink. *Leaves* four to six inches long by one to one and a half inches broad, shortly petioled, ovate- or oblong-lanceolate or oblanceolate, obtusely caudate-acuminate, bright green and glossy, paler beneath; nerves six to ten pairs, very slender, with small glands at the axils, which are white, and perforated in the upper surface, green on the under; stipules triangular-ovate, acuminate. *Flowers* very shortly peduncled, solitary or 3-nate, terminal and axillary, one to one and a half inch across the corolla-lobes; bracts linear, caducous. *Calyx* limb erose. *Corolla-tube* about a third of an inch long, lobes 6–10,

linear, obtuse, stellately spreading. *Stamens* 6-10; anthers linear-subulate. *Berry* half an inch in diameter, globose. *Seeds* hemispheric, with a narrow ventral furrow.—*J. D. H.*

Fig. 1, Portion of leaf, showing upper surface and glands; 2, ovary, style and stigmas; 3, portion of corolla with stamens laid open; 4, vertical section of ovary, exposing ovules; 5, berry (*from the Kew Museum*); 6, seeds; 7, transverse section of seed; 8, vertical section of do.; 9, embryo:—All but No. 5 *enlarged*.

M. S. del J.N. Fitch lith.

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Tab. 7476.

MASDEVALLIA corniculata, *var.* inflata.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 492.)

Masdevallia (Cucullatæ) *corniculata*, var. *inflata*; folio oblongo obtuso in petiolum sulcatum angustato subtus carinato, bractea ampla tubo perianthii æquilonga cymbiformi rostrata viridi; corollæ aurantiacæ tubo inflato urceolari 6-costato extus et intus rubro punctulato, lobis aureis e basi triangulari longe filiferis, petalis erectis carnosulis lanceolatis basi inæquilateris apices versus dentatis, labello petalis æquilongo breviter crasse unguiculato lanceolato obscure 3-lobo disco papilloso apice denticulato, columna gracili, anthera apice truncata 2-dentata, ovario 3-alato, alis undulatis.

R. inflata, *Reichb. f. in Gard. Chron.* (1881) vol. ii. p. 716. *Godefroy in Orchidophile* (1881) p. 172.

R. corniculata *var.* inflata, *Veitch Man. Orchid.* pt. v. p. 37.

Masdevallia corniculata belongs to a small group of the genus characterized by the solitary leaf-stalk and 1-fld. scape being enclosed in a long tubular scarious sheath, and by the very large cymbiform green bract that arches over the flower. Up to the present time only two other species of the group are known, *M. cucullata*, Lindl., and *M. macroura*, Reichb. f. All are natives of the temperate regions of the New Grenadan Cordillera. *M. corniculata* was introduced in 1877 by Messrs. Backhouse, and is well figured in the Marquess of Lothian's fine work, "The Genus Masdevallia," in which unfortunately the plates are not numbered, or the descriptions paged. A reference to that figure shows that var. *inflata* differs from it most conspicuously in the paler colour, and much smaller spots of the perianth, and in the broader perianth-lobes, which are of a golden-yellow colour within, not orange-brown bordered with yellow, as in the figure cited of *M. corniculata*. The lip, too, is more narrowed to the toothed apex, and has rounded (not acute) side-lobes. The var. *inflata* first appeared in Mr. Bull's collection in 1881, and

a specimen of it was sent in 1887 to the Herbarium of the Royal Gardens by Mr. Moore from the rich orchid collection of Glasnevin. The plant figured was presented to Kew in 1891 by S. Courtauld,. Esq., of Braintree, where it has flowered annually in a cool house in the month of October.

Descr.—*Stems* tufted, very short; petiole enclosed for half its length in three superposed scarious, tubular cylindric sheaths, with truncate mouths, of which the lower are short, the uppermost an inch long, more inflated, and half an inch in diameter. *Leaf* solitary, three to five inches long, by one to one and a quarter inches broad, linear-oblong, obtuse, coriaceous, channelled above, and bright green, paler beneath, with a prominent keel, nerveless till dried, then 5-nerved, base narrowed into a stout channelled petiole two inches long, enclosed for the most part in the sheaths of the stem. *Scape* three inches long, stout, erect, 1-fld., enclosed for half its length in the upper sheath of the stem, and with minute sheathing bracts at its base. *Bract* cymbiform, beaked, one and a half inches long, erect, green, base rounded. *Corolla-tube* urceolate, base gibbous in front, 6-ribbed, orange-yellow, speckled with red without and within; limb yellow, of three triangular-ovate lobes tapering into slender tails one and a half to two inches long, upper erect, two lower pendulous flexuous. *Petals* erect, lanceolate, margins undulate, shortly broadly unguiculate, toothed towards the tip, base excised in front. *Lip* erect, shortly clawed, lanceolate, dilated in the lower half, papillose, tip toothed. *Column* rather slender; anther truncate and 2-toothed in front.—*J. D. H.*

Fig. 1, Ovary, petals and column; 2, petal; 3, lip; 4, column; 5, anther; 6, pollinia:—*All enlarged.*

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CONTENTS OF No. 617, MAY, 1896.

TAB. 7472.—OSTROWSKIA MAGNIFICA.
„ 7473.—PITTOSPORUM ERIOCARPUM.
„ 7474.—COCHLIODA NOEZLIANA.
„ 7475.—COFFEA STENOPHYLLA.
„ 7476.—MASDEVALLIA CORNICULATA *var.* INFLATA.

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Tab. 7477.

AGAVE laxifolia.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 738.)

Agave (*Euagave*) *laxifolia*; breviter caulescens, foliis 20–30 laxe rosulatis oblongo-lanceolatis crassis coriaceis facie sordide viridibus dorso pallide viridibus spinâ parva brunnea pungente terminatis, spinulis marginalibus parvis deltoideis apice brunneis, pedunculo valido elongato, floribus in paniculam laxam ramis corymbosis dispositis, bracteis parvis deltoideis, pedicellis apice elongatis, ovario cylindrico. perianthii tubo infundibulari limbi lobis lanceolatis basi deltoideis, staminibus limbo 2–3-plo. longioribus, antheris linearibus magnis.

A. laxifolia, *Baker*.

This *Agave* has been cultivated for many years in the Royal Gardens at Kew, and flowered for the first time in the summer of 1895. It was received as a variety of *A. mexicana*, but it differs widely from all the forms of that species by its laxly disposed rosette of leaves, which are green on both sides even in an early stage, and by its smaller spinules. Its place is in the section *Rigidæ*, in the neighbourhood of *A. excelsa*, Jacobi. The flowers give out a smell exactly like that of mice. As in many other species the style does not grow out to its full length till after the anthers of the same flower are faded.

Descr.—Shortly caulescent. *Leaves* twenty or thirty in a lax rosette, oblong-lanceolate, firm in texture, one and a half or two feet long, three inches broad at the middle, by half as much above the dilated base, above which they are half an inch in thickness, dull green on the face, paler green on the back, without any glaucous tinge, even in an early stage, with a small brown pungent end-spine, and copious small deltoid marginal spinules, tipped with brown. *Peduncle* stout, four or five feet long. *Inflorescence* a lax panicle about as long as the peduncle, with corymbose branches; bracts small, deltoid; pedicels half an inch long, articulated at the tip. *Ovary* cylindrical, green, an inch and a half long. *Perianth-tube* funnel-shaped, half an inch

long; lobes green, half as long again as the tube. *Stamens* inserted at the throat of the perianth-tube, two inches long; anthers large, linear. *Style* finally overtopping the anthers.—*J. G. Baker.*

Fig. 1, a flower cut open; 2, front view of anther; 3, back view of anther:—*All enlarged*; 4, entire plant, *much reduced.*

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Tab. 7478.

HABENARIA Elwesii.

Native of the Nilghiri Hills.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Habenaria, *Willd.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 625.)

Habenaria (Ate) *Elwesii*; læte virescens, tuberibus oblongis, caule folioso, foliis erectis ovato- v. elliptico-lanceolatis acuminatis, vaginis teretibus, racemo laxifloro, bracteis floribus æquilongis lanceolatis acuminatis scaphiformibus marcescentibus, floribus 2-poll. longis flavo-viridibus, sepalis ovato-lanceolatis acuminatis lateralibus deflexis, petalis e basi lata profunde in lacinias elongato-subulatas divaricatas falcatas sepalis longioribus pilosas sectis, labelli glaberrimi limbo lineari in segmenta 3 elongata filiformia limbo multoties longiora fisso, calcare gracili pedicello æquilongo ore lingula calcariformi recurva instructo, columna lata obtusa, staminodiis erectis clavatis apice glandulosis, antheris divergentibus tubulis brevibus clinandrio adnatis, rostello late deplanato, processubus stigmaticis corniformibus divaricatis.

Habenaria Elwesii, though horticulturally devoid of beauty, is a very interesting plant botanically, as being the first that has been cultivated in this country of a curious Indian group of that immense genus, which I have characterized as *Ate*, in which the petals are bifurcate. The type of the group is *H. barbata*, Wight, upon which Lindley founded the genus *Ate*, taking for its character the presence of a recurved process on the lip at the mouth of the spur, on the side opposite the column, and which is seen in fig. 2 of the accompanying plate. This process is present or absent in very closely allied species, all having divided petals, and I therefore, in the "Flora of British India," took the latter character as that of the group *Ate*, bringing under it fourteen plants of obvious near affinity. The function of the above-mentioned process of the lip is to guide the proboscis of an insect into the spur, whilst it brings its head or part of its body into contact with the glands of the pollinia, and thus removes these. This was first pointed out by Roland Trimen,* who was induced by

* *Journ. Linn. Soc.* vol. ix. (1867) p. 156, t. 1.

Darwin's account of the organization of the Cape plant *Bonatea speciosa*,* which has a similar process in the same position at the mouth of the spur, to examine living specimens of that plant. By a curious coincidence *Bonatea* has the cleft petals of "*Ate*," and is otherwise so near to *Habenaria* that Lindley referred the Indian *Habenaria trinervia*, Wight, to *Bonatea*, as *B. punduana;* and subsequently both he and Reichenbach have reduced all the *Bonateæ* to that genus. Mr. Bolus in his Orchids of S. Africa (Tab. 16) also reduces a species of *Bonatea* to *Habenaria*. The principal character of the former genus as distinguishing it from the *Ate* group, is the enormous helmet-like rostellum, the staminodes reduced to papillæ on the sides of the rostellum, and the long tubular stigmatic processes; but how far these characters differentiate *Bonatea* from other *Habenarias* I am unable to say. The fact is that the modifications of staminodes, anthers, rostellum and stigmatic processes of *Habenaria* are so extraordinarily great, even in apparently allied species, that when working up the Indian species I hoped to have been able to use them for sectional purposes; but, like Bentham before me, I failed in the attempt.

H. Elwesii is most nearly allied to *H. digitata*, Lindl., (*H. trinervia*, Wight *Icon. Plant. Ind. Or.* t. 1701), differing in the much larger flowers, hairy petals with much longer divisions, long lobes of the lip, and spur-like stigmatic processes. The only other species with hairy petals is *H. barbata*, Wight (Ate virens, *Lindl.*; *Wight Ic.* t. 928), which has small flowers with shortly bifid petals, a scabrid lip cleft at tip only into short subulate segments, and clavate stigmatic processes. *H. Elwesii* is a native of Nilghiri Hills, whence it was sent to the distinguished naturalist and horticulturist whose name it bears by Mr. Proudlock, Curator of the Gardens and Parks of Ootacamund. It flowered in Mr. Elwes' garden at Colesborne, Gloucestershire, in July of last year.—*J. D. H.*

Fig. 1, Petal; 2, front and 3 side views of column; 4, pollinia:—*All enlarged.*

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* On the Contrivances by which Orchids are fertilized by Insects, Ed. ii. pp. 87, &c.

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Tab. 7479.

PHAJUS MISHMENSIS.

Native of the Eastern Himalaya.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Phajus, *Lour.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 512.)

Phajus *mishmensis*; caulibus fastigiatis erectis elatis basi vix pseudobulbosis superne foliosis, foliis alternis quaquaversis elliptico-ovatis -lanceolatisve acuminatis 5-nerviis, scapis axillaribus gracilibus elongatis erectis laxe plurifloris, floribus erecto-patentibus roseis, bracteis pedicellis gracilibus æquilongis lanceolatis acuminatis concavis herbaceis caducis, sepalis petalisque lineari-oblongis acutis apicibus subrecurvis, labelli lobis lateralibus amplis rotundatis recurvis terminali brevi explanato trilobulato lobulis obtusis, intermedio 2-fido, calcare gracili incurvo sepalis dimidio breviore, disco crista ciliata instructo, columna gracili supra medium dilatata, apice 2-loba, anthera hemispherica pilosula.

P. mishmensis, *Reichb. f. in Bonplandia*, vol. v. p. 43; in *Walp. Ann.* vol. vi. pp. 922, 928. *Hook. f. Fl. Brit. Ind.* vol. v. p. 817, and in *Ann. Roy. Bot. Gard. Calc.* vol. v. pt. I. p. 25, t. 37.

P. roseus, *Rolfe in Kew Bulletin* (1893) 6, and (1894) 182 (mishmensis).

Limatodes mishmensis, *Lindl. & Paxt. Fl. Gard.* vol. iii. p. 36.

There are considerable differences in the habit of growth of the species of *Phajus*, of which I took advantage in dealing with the Indian species in "The Flora of British India;" and it remains to be seen how far the grouping there adopted is applicable in the African and other extra-Indian species. In *P. Wallichii*, Lindl., better known as *P. bicolor*, Lindl. (Tab. 4078), the flowering scape arises from the side of the pseudobulb. In *P. callosus*, Lindl., of the Malay Peninsula and Java, from the top of the pseudobulb. In *P. mishmensis* the one or more scapes are axillary; and in *P. albus*, Lindl. (t. 3991) the inflorescence terminates the leafy stem, which latter character, and the bifarious leaves, are those which that species was raised to generic rank as *Thunia* by Reichenbach. *P. mishmensis* was discovered in the Mishmi Mts. in Upper Assam by Griffith in 1836, and was first published by Lindley as a *Limatodes* from Griffith's Herbarium specimens. It has recently been collected in the Sikkim Himalaya by Mr. Clarke and other botanists at elevations of 4–5000 ft.:

and in Lower Burma at 6000 ft. by Mr. Boxall, when collecting for Messrs. Hugh Low and Sons of Clapton. Very recently it has been described as *P. roseus*, under the misapprehension that it was an undescribed species of Western tropical Africa. The specimen here figured was presented by the Rt. Hon. the Earl of Scarborough to the Royal Gardens in November, 1895, who collected it himself during his visit to India.

Descr.—*Stems* two to three feet from a tuberous lobed base, terete, green, leafless and sheathed below, leafy above. *Leaves* six to ten inches long, elliptic-lanceolate, acuminate, plicately five-nerved, margins rather waved, dark green above, paler beneath with prominent nerves; sheaths with acutely angled ribs. *Scapes* one or more, axillary from the lower leaves, one to two feet long, together with the loose, erect raceme slender, green, with a few scattered appressed lanceolate sheaths towards the base and middle. *Raceme* eight- to ten-fld.; bracts about an inch long, as long as the slender erecto-patent pedicel and ovary, lanceolate, acuminate, concave, herbaceous, dark green, caducous. *Flowers* nearly two inches broad when expanded, pale or dark rose-colrd.; lip paler and speckled. *Sepals* acuminate, with recurved tips, keeled, linear-oblong; dorsal more oblanceolate, concave. *Petals* narrower than the sepals. *Lip* nearly as long as the sepals, three-lobed; side lobes broad, orbicular, margins recurved, midlobe subquadrate, truncately 3-lobulate; side lobules rounded, median much smaller, 2-fid; disk of lip with a median hairy ridge; spur one half to two-thirds of an inch long, rather slender, incurved, yellow, tip 2-lobed. *Column* long, rather slender, the sides dilating above the middle into narrow wings, top 2-lobed; anther hemispheric, sparsely hairy.—*J. D. H.*

Fig. 1, Section of the lip; 2, column and spur; 3, anther; 4 and 5, pollinia:—*All enlarged*: 6, *reduced* figure of the whole plant.

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Tab. 7480.

ERANTHEMUM RETICULATUM.

Native of the Melanesian Islands?

Nat. Ord. Acanthaceæ.—Tribe Justicieæ.

Genus Eranthemum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1097.)

Eranthemum *reticulatum*; suffruticosum, glaberrimum, foliis ovato-lanceolatis obtusis in petiolum alatum angustatis marginibus undulatis, senioribus luride viridibus nervis sulphureis, junioribus angustioribus pulcherime aureo viridique reticulatis, racemis axillaribus terminalibusque erectis, pedicellis bracteatis, bracteis parvis subulatis, calycis segmentis snbæqualibus angustis, corollæ hypocrateriformis tubo calyce plusquam duplo longiore, limbo explanato subbilabiato albo orm versus sanguineo adsperso, lobis apice rotundatis 2-posticis oblongis 3 anticis majoribus latioribus, filamentis breviusculis, antheris oblongis rufobrunneis.

E. reticulatum, *Hort. ex Gard. Chron.* (1875) vol. i. p. 619.

E. Schomburgkii, *Hort. ex Illustr. Hortic.* vol. xxvi. (1879) t. 349.

E. aureo-reticulatum, *Hort.*

Though well known in cultivation in England for upwards of a quarter of a century, the native country of the beautiful plant here figured is unknown, and its names are of "garden" authority. In the earliest notice that I can find of it, that in the *Gardener's Chronicle*, nothing is said of its origin; but four years later, in the "Illustration Horticole," it is stated to have been received from Australia, and the adoption for it of the name *Schomburgkii* would imply that the late Director of the Botanical Gardens of Adelaide (Richd. Schomburgh) was concerned in its introduction. The figure in the latter work is accompanied with a note to the effect that it is "apparently Melanesian."

E. reticulatum has been long cultivated at Kew, where it has attained a height of four feet, flowering in autumn in a stove.

Descr.—A small, erect, leafy, evergreen shrub; branches obtusely four angled. *Leaves* opposite, lower six to ten inches long, ovate-lanceolate, dark green above with arching golden nerves, pale beneath, margins undulate, tip rounded; base cuneiform, rounded or subcordate, narrowed

suddenly into a stout petiole about an inch long; upper leaves narrower, beautifully reticulated with golden or sulphur-yellow and green. *Panicles* in the upper leaf-axils and terminal, strict, erect; branches, bracts, and sepals pale green; pedicels one-fourth inch long, or of the lower flowers longer, slender, bracteate at the base and middle, bracts small, subulate. *Calyx* a third of an inch long, narrow; segments linear, acute, subequal, erect. *Corolla* salver-shaped, white, tube more than twice as long as the calyx, straight, narrow, white, speckled with red at the shortly funnel-shaped top; limb an inch and a half broad, pure white, speckled with blood-red round the mouth of the tube, sub 2-lipped, lobes oblong tips rounded; two posticous smallest, suberect, of the three anticous the middle is the broadest. *Stamens* 2; filaments short, erect, each with a minute 2-fid staminode at its base; anthers oblong, red-brown. *Ovary* glabrous, seated in a rather long annular disk; style slender, stigma 2-fid.—*J. D. H.*

Fig. 1, Calyx and style; 2, portion of throat of corolla and stamens; 3 and 4, anthers; 5, ovary and disk:—*All enlarged.*

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Tab. 7481.

EPISCIA densa.

Native of Demerara.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Episcia, *Mart.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1006.)

Episcia (Centrosolenia) *densa*; caule robusto brevi puberulo atque petiolis foliis subtus sepalis extus sanguineo-rubris, foliis longe petiolatis ovato-oblongis subacutis crenato-serrulatis basi rotundatis v. subcordatis, supra laete viridibus pilosulis subtus glabris costa nervisque validis, petiolo semicylindrico, floribus in racemulis axillaribus congestis, pedunculis pedicellisque brevibus, bracteis parvis, calycis urceolaris segmentis oblongis obtusis ciliolatis intus viridibus postico parvo libero ceteris connatis, corolla fere 2-pollicari subcylindracea hirsuta straminea basi dorsa gibba dein paullo inflata, lobis 5 brevibus patentibus planis rotundatis intus primulinis. staminibus inclusis, filamentis glaberrimis, antheris didymis per paria apices versus cohaerentibus, ovario hirsuto, stigmate capitellato 2-lobo, disci **glandula solitaria postica.**

E. densa, *C. H. Wright in Kew Bulletin* (1895) p. 17.

E. densa belongs to the *Centrosolenia* section of the very considerable genus *Episcia*, characterized by the short stem, crowded flowers, narrow calyx-segments, and by the gibbously saccate base of the tube of the corolla. Amongst those figured Mr. Wright considers its nearest ally to be *E. erythropus*, Hook. f., Tab. 6219 of New Grenada.

It is curious that though the upper or exposed surface of the leaves are green, and the under crimson, the corresponding surfaces of the sepals are, the outer red and inner green. *Episcia densa* was received in 1895 from M. Jenman, F.L.S., Govt. Botanist and Superintendent of the Botanical Gardens of Georgetown, Demerara, who discovered it on the banks of the river Masouria. It flowered in a stove at Kew in October of the same year.

Descr.—*Stem* short, as thick as the middle finger, cylindric, puberulous, dull purplish-crimson. *Leaves* few, crowded, six to ten inches long, ovate-oblong, subacute, crenate-serrulate, base cuneate, rounded, or subcordate, above bright green slightly pubescent, beneath bright

blood-red, quite glabrous, with very stout midrib, and many arching nerves; petiole three to four inches long, stout, semi-cylindric. *Racemes* of flowers crowded on the arrested nodes of the stem, very short; peduncles and pedicels short, red-purple; bracts minute. *Calyx* two-thirds of an inch long; lobes oblong, erect with recurved tips, coloured externally like the undersurface of the leaves, green to the base within, margins ciliate; dorsal lobe smallest, free, the rest connate to above the middle. *Corolla* nearly two inches long, slightly decurved, tubular, hirsute, pale straw-coloured, posticously gibbous at the very base, contracted above it, and then somewhat inflated; lobes very short, orbicular, expanded, flat, primrose-yellow. *Stamens* included; filaments quite glabrous; anthers didymous, each pair adhering by their tips. *Ovary* ovoid, hirsute; style slender; stigma capitellate, 2-lobed, included. *Disk-gland* solitary, posticous, 2-lobed.—*J. D. H.*

Fig. 1, Section of calyx showing disk and pistil; 2, corolla laid open; 3, base of corolla; 4 and 5, anthers:—*All enlarged.*

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Tab. 7482.

LOURYA campanulata.

Native of Cochin-china.

Nat. Ord. Hæmodoraceæ.—Tribe Ophiopogoneæ.

Genus Lourya (*Baill. Bull. Soc. Linn. Paris, No.* 93, p. 743.)

Lourya *campanulata*; rhizomate brevi, foliis radicalibus longe petiolatis oblongo-lanceolatis utrinque acuminatis nervis elevatis subplicatis, petiolis basi vaginis membranaceis stipatis, floribus in racemos breves breviter pedunculatos densifloros dispositis, bracteis ovatis acuminatis membranaceis, pedicellis brevibus, perianthii late campanulati marcescentis lobis 6 2-seriatis subæqualibus patentibus subacutis flavidis, exterioribus late ovatis, interioribus late oblongo-ovatis, ore membrana horizontali antherifera fere clausa, antheris 6 erectis late oblongis 2-locularibus, ovario infero late obconico depresso 3-loculari, stigmate parvo pyramidato obtuse trilobo, ovulis in loculis paucis basilaribus erectis anatropis, bacca ovoidea cœrulea.

L. campanulata, *Baill. l. c. Carrière in Rev. Hortic.* vol. lxi. (1889) p. 128, fig. 32.

A very curious plant, with the habit of *Curculigo* and *Peliosanthes*, differing from the former of these genera in the stamens and basal ovules; and from *Peliosanthes* in the baccate fruit, the pericarp of which is not burst open when in a young state by the enlarging seeds, and thus necessitating the maturing of the latter in a freely exposed condition. I have unfortunately been unable to figure or describe the seeds of *Lourya* from the fruit of the Kew plant having been destroyed by insects on ripening.

The specimen here figured was obtained from a French nursery in 1892. It flowered in a stove of the Royal Gardens, first in December, 1894, and again in January, 1896, when the fruit of the former year was approaching maturity.

Descr.—*Rootstock* stout, shortly creeping underground, and throwing up tufts of leaves and flowering stems, the petioles and peduncles of which are enveloped in long, lanceolate, pale yellow-brown membranous sheaths, two to four inches long. *Leaves* (with the petiole) ten to twenty inches long, by three to four broad, erect, inclined or drooping, oblong-lanceolate, acute at both ends, narrowed

into a terete, stiff, green petiole, three to six inches long, dark glossy green above, paler beneath, plicate and traversed by ten to twelve prominent nerves, which are united by transverse nervules. *Raceme* radical, shortly peduncled, sub-corymbiform, about three inches long, very dense-fld.; bracts membranous, as long as the flowers, ovate, acuminate. *Flowers* half an inch in diameter, shortly pedicelled, nodding, pedicel jointed above the middle. *Perianth* broadly campanulate, pale yellow, with a dark purple disk formed of the confluent filaments; tube very broadly obconic; limb superior, of six broad spreading membranous lobes in two series, outer broadly ovate, inner oblong-ovate. *Filaments* united in a horizontal dark purple membrane, nearly closing the tube, but leaving a hexagonal opening over the stigma; anthers small, erect. *Ovary* inferior, 3-celled, surmounted by a small sessile central pyramidal 6-lobed obtuse stigma; ovules several in each cell, basal, erect, anatropous. *Fruit* an inch long, ovoid, obtuse, terete, dark blue, smooth, shining, surrounded at the base by the withered perianth.—*J. D. H.*

Fig. 1, Bracts and flower-bud, *of the natural size*; 2, section of flower; 3, portion of staminal ring; 4, stigma:—*All enlarged.*

M.S. del, J.N. Fitch lith

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Tab. 7483.

PILOCARPUS Jaborandi.

Native of Pernambuco.

Nat. Ord. Rutaceæ.—Tribe Zanthoxyleæ.

Genus Pilocarpus, *Vahl.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 299.)

Pilocarpus *Jaborandi*; ramis ramulis petiolisque hirtellis, foliis alternis, foliolis 4–5-jugis oppositis breviter petiolulatis coriaceis ellipticis oblongisve obtusis v. retusis glanduloso-punctatis, supra luride viridibus subtus flavo-viridulis, racemis gracilibus decurvis, pedicellis medio minute bracteolatis, floribus parvis pentameris, calycis tubo hemispherico, limbo brevissimo obtuse 5-lobo, petalis lanceolatis acutis 1-nerviis roseis basi marginibusque luteis, disco undulato glanduloso-punctato, carpellis maturis 3–5 tenuiter coriaceis apice rotundatis lateribus sulcis concentricis exsculptis, seminibus ovoideo-oblongis nigris nitidis.

P. Jaborandi, *Holmes in Pharmaceut. Journ. Ser. III.* vol. xxiii. (1893) p. 1008; *Ser. IV.* vol. i. (1895) pp. 520, 541.

P. pennatifolius, *Bentl. & Trim. Medic. Plants*, t. 48, figs. 6–11 *tantum*.

The name *Jaborandi* has been applied indiscriminately to drugs produced by Brazilian plants of various natural families and genera, the properties of which are diaphoretic and sialogogue; but it was not till comparatively recently that the one has been introduced into medical practice in Europe, which now is understood by that name. This was sent from Pernambuco by Dr. Coutinho of Pernambuco to Prof. Gubler of Paris, who tested its properties, and confirmed Dr. Coutinho's statement as to their powerful effects. A sample of the drug, which consisted of dried and broken leaves, was communicated to Prof. Baillon, who referred it to the genus *Pilocarpus*, Vahl. of *Rutaceæ*; an opinion which was almost simultaneously confirmed by Mr. Holmes from an examination of some dried fruits which he had received from Pernambuco. Its specific determination, however, remained indeterminable until complete specimens should be obtained, and it was in the meantime doubtfully referred to *Pilocarpus pennatifolius*, Lemaire, a native of Paraguay and San Paolo in South Brazil (see Tab. 7235 of this Magazine). This identification was, however, disposed of by Prof. Oliver, who, after

a careful comparison of the leaves of *P. pennatifolius* with those of the Pernambuco plant (see *Kew Bulletin*, 1891, p. 179) pronounced them to belong to different species. Fortunately, in 1882, ripe seeds of what has proved to be the true plants of Pernambuco, were presented by Dr. J. L. Paterson, of Bahia, to the Royal Botanic Gardens of Edinburgh, from which plants were raised and distributed. One of the latter, given to the Cambridge Botanic Gardens, flowered there in 1893. From it Mr. Holmes was enabled to draw up a full description; and finding it to be a new species, named it very appropriately *Pilocarpus Jaborandi*.

The drawing here given was made from a plant communicated to the Royal Gardens from Cambridge, which flowered in a stove in January, 1896.

Descr.—A bush or small tree; branches, branchlets, petioles and rachis of the leaves hirtellous. *Leaves* alternate, pinnate; petiole short, and rachis terete, stout; leaflets 3–4 pairs with a terminal one, three to three and a half inches long, opposite, shortly petiolulate, oblong or elliptic, obtuse, retuse, or emarginate, coriaceous, quite glabrous, dark green and shining above, yellow green and glandular-dotted beneath, base slightly unequal; nerves about eight to ten pairs, slender, arching. *Racemes* axillary, a foot long, slender, shortly peduncled, many-flowered, rachis terete, reddish-green; pedicels about half an inch long, slender, spreading, with a minute triangular bract at the base, and two very inconspicuous rudiments of bracteoles above the middle. *Flowers* a third of an inch broad. *Calyx* broadly cupular, obscurely broadly 5-lobed. *Petals* lanceolate, 1-nerved, dark rose-colrd., with golden margins and base. *Filaments* erect, about as long as the petals; anthers oblong. *Disk* undulate. *Ovary* depressed, top 5-lobed, stigma very short, 5-lobed. *Fruit* about an inch broad, of three to five suborbicular free, thinly coriaceous or sub-crustaceous, dehiscent carpels, the sides of which are marked with concentric ridges. *Seeds* few, broadly oblong, testa black shining.—*J. D. H.*

Fig. 1, Flower-bud and pedicel; 2, flower; 3, calyx, disk and ovary; 4 and 5, stamen:—*All enlarged*; 6 and 7, fruit and seed of the *natural size*; 8, ***greatly reduced*** **view of the flowering portion of a young plant.**

M. J. del, J.N. Fröhlich

Tab. 7484.

ASPIDISTRA typica.

Native of Tonkin?

Nat. Ord. Liliaceæ.—Tribe Aspidistreæ.

Genus Aspidistra, *Ker.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 772.)

Aspidistra *typica*; foliis longe petiolatis elliptico-lanceolatis acuminatis basi subinæquilateralibus utrinque laete viridibus sub-7-nerviis, nervulis transversis creberrimis, petiolo gracili canaliculato viridi dorso rotundato, floribus numerosis longe pedunculatis, pedunculo robusto prostrato v. geniculatim decurvo flexuoso vaginato purpureo maculato, vaginis sparsis brevibus ovatis obtusis flavidis, floribus 2-bracteatis, bracteis perianthio suppositis late ovatis acutis patentibus purpureo-variegatis, perianthio crasse coriaceo globoso breviter 6-fido extus pallide purpureo punctulato intus saturate purpureo, lobis ovatis obtusis erectis æstivatione valvatis apicibus imbricatis, antheris 6 parvis basi perianthii sessilibus, ovario brevi 3-loculari loculis 2-ovulatis, stylo brevi crasso stigmate umbraculiforme margine 6-lobo.

A. typica, *Baill. in Bull. Soc. Linn. Paris*, No. 143 (1894) p. 1129. *Wiener Illustr. Gartenz.* (1894), p. 266. *Kew Bulletin* (1895) *App.* II. 34.

The remarkable plant here figured differs from its congeners in the apparently constantly trimerous parts of the flower, the arrangement in the other species being normally tetramerous; though a departure to the trimerous is known to occur in one of these. In fact the genus *Aspidistra* was established on a trimerous flowered state of *A. lurida*, as will be found on referring to the original description of the genus by Ker in the *Botanical Register* (t. 628); the tetramerous state of which species is figured at t. 2499 of this magazine. It is this reversion in *A. typica* from the tetramerous state (which is abnormal amongst Monocotyledons) to the typical trimerous of this class, that the species owes its name. Another member of the genus, *A. punctata*, var. *albo maculata*, is figured at t. 5386 of this work. It has also tetramerous flowers; as has *A. punctata*, Lindl. (*Bot. Reg.* t. 977). These two plants, if specifically the same, which is, I think, doubtful, differ from *A. lurida* and *typica* in their stigma, which is not a simple umbrella-like 6-lobed organ, but has a much divided circumference of 6 teeth alternating with as many reflexed lobules.

M. Baillon has described (*Bull. Soc. Linn. Paris, l. c.*)

a curious modification of the flower of a Javan species, *A. elatior*, Blume, which has the stigma of *A. punctata*. In this the inner walls of the tube of the perianth are perfectly smooth till the stigma has attained its greatest diameter, when folds are formed on the inner walls, that fit into the spaces between the marginal teeth of the stigma, thus enclosing the mature anthers in a sealed chamber, requiring force to open it. Referring to the enlarged view of a flower of *A. punctata* laid open, at fig. 1 of t. 5386, it appears to me possible that access to the closed chamber in this species may be provided by the reflexion of the folds between the teeth of the stigma, after the maturation of the anthers, for the admission to these of insects or their organs. And if, as I suspect, the stigmatic surfaces, which are punctiform, occupy the tips of the reflected lobes, the arrangement would be adapted for cross-fertilization of the plant, because any insect seeking access to the anthers must brush past a stigmatic surface. It remains to be observed during its next flowering, whether the perianth-tube and stigma of *A. typica* undergo modifications analogous to those of *A. elatior*.

A. typica was obtained by the Royal Gardens, Kew, from the Jardin des Plantes, Paris, in 1895, and it flowered in a stove in September of the same year.

Descr.—*Rootstock* stout, creeping. *Leaves* twelve to eighteen inches long, long-petioled, elliptic-lanceolate, nerves about 7, with many cross nervules, base acute, unequal; petiole longer than the blade, channelled in front. *Flowers* very many, radical; peduncles two to two and a half inches long, stout, flexuous, prostrate or geniculately decurved, purple with darker blotches; sheaths few, distant, oblong, obtuse. *Flowers* two-thirds of an inch in diameter, thickly coriaceous, globose, six-cleft, base closely embraced by two ovate spreading purple bracts, dirty white or greenish speckled with red, dark purple within; lobes one-third to one half the length of the perianth, biseriate, ovate, subacute, erect, then spreading. *Stamens* six; anthers reniform, sessile on the base of the perianth. *Ovary* very short, crowned with an umbrella-like six-lobed stigma.—*J. D. H.*

Fig. 1, Flower with portion of perianth removed; 2, portion of perianth and stamen; 3, stamen:—*All enlarged*;—**4**, *reduced view* of whole plant.

M.S. del, J.N. Fitch lith

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Tab. 7485.

AKEBIA lobata.

Native of China and Japan.

Nat. Ord. Berberideæ.—Tribe Lardizabaleæ.

Genus Akebia, *Dcne.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 42.)

Akebia *lobata*; frutex alte scandens glaberrimus, ramulis cylindraceis lenticellatis cortice brunneo, foliis gracile petiolatis 3-foliolatis racemisque gemmis lateralibus enatis, foliolis gracile petiolulatis late ovatis obtusis repando-lobulatis apice retusis apiculatis pallide viridibus, racemis gracilibus nutantibus pendulisve; *fl. masc.* parvis numerosis confertis pallide purpureis breviter pedicellatis, bracteis subulatis, sepalis ovatis, antheris subsessilibus loculis linearibus extrorsis, connectivo crasso; *fl. fœm.* paucis multo majoribus longe pedicellatis, sepalis concavis coriaceis purpureis, staminodiis 6 minutis, carpellis 3–6-viridibus, stigmatibus purpureis, baccis oblongi obtusis polyspermis, seminibus atris pulpa aquosa immersis.

A. lobata, *Dene. in Ann. Sc. Nat. Ser.* II. vol. xii. (1839) p. 107; & in. *Archiv. Mus. Par.* vol. i. p. 195, t. 13, B. *Walp. Rep.* vol. i. p. 99. *Sieb. & Zucc. Fl. Jap.* vol. i. p. 145, t. 78. *Miquel Prolus. Fl. Jap.* p. 197. *Franch. & Sav. Enum. Pl. Jap.* i. p. 21. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1886) p. 30. *Tokio Hort. Bot.* vol. ii. t. 2.

One species of *Akebia*, *A. quinata* (Tab. 4864) has been long known in European gardens, having been introduced from China or Japan (of both which countries it is a native) half a century ago; but though three other species from the same country have been described, it is only quite lately that a second, the subject of the accompanying plate, has been imported. This latter differs a good deal in habit from *A. quinata*, in having more woody branches, and trifoliolate leaves with broad lobulate very pale green more membranous leaflets, the flowers too are smaller, though of the same structure and colour; and, as in *A. quinata*, the females are fewest, much the largest, and placed below the males in the raceme.

A. lobata is a native of Japan and N. China, and is apparently common in both countries; in the former specimens have been collected in various localities between Hakodadi and Yokohama; and in the latter from the provinces of Kiang-su, Szechuen, and Hupeh. Of two other

Japanese species, *A. quercifolia*, and *clematifolia*, Sieb. & Zucc., Count Ito has made a note in the Kew Herbarium, that they may be only varieties of *A. lobata*.

The drawing here reproduced was made from a plant that flowered in a greenhouse of the Royal Gardens, Kew, in January of the present year, and which was received from Mr. F. Takagi, nurseryman of Tokio. The fruit is described from the Japanese work cited above, which contains an excellent figure of the species.

Descr.—A tall glabrous climbing shrub; branches cylindric, woody, flexuous, as thick as a goose-quill, bark brown, covered with scattered lenticels; buds at the rather distant internodes, covered with oblong obtuse green and purple herbaceous deciduous scales, and sending forth leaves and flowers from an arrested axis. *Leaves* long-petioled, trifoliolate, three to five inches long; petiole two to three inches long, very slender; leaflets petiolulate, petiolule of lateral one-eighth to one-half inch, of terminal nearly one inch; blade one to two inches long, broadly ovate, repand-lobulate, tip retuse and apiculate, almost membranous, pale green above, paler and bluer green beneath; nerves few, very slender. *Raceme* with its long peduncle three to four inches long, slender, nodding or pendulous. *Male fl.* very numerous, one-sixth inch diameter, shortly pedicelled, crowded, pale purple; bracts minute. *Sepals* ovate, acute, incurved. *Anthers* 6, subsessile, cells linear, extrorse; *fem. fl.* few, below the males, distant from one another, one half to nearly an inch in diameter, pedicels half to two-thirds of an inch. *Sepals* orbicular-ovate, concave, dark vinous purple. *Staminodes* 6, minute, of imperfect anthers alternating with the carpels. *Carpels* three to six, green with purple stigmas. *Fruit* ripens after frost, three inches long, oblong, cylindric, slightly curved, rounded at both ends; pericarp thin. *Seeds* few or many, black, immersed in a white pulp.—*J. D. H.*

Fig. 1, Male flower; 2, three stamens and pistillode; 3, stamen; 4, carpels and staminodes:—*All enlarged.*

M. S del. J N Fitch lith

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Tab. 7486.

HAEMARIA Dawsoniana.

Native of Burma.

Nat. Ord. Orchideæ.—Tribe Neottieæ.

Genus Haemaria, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 601.)

Haemaria *Dawsoniana*; caule robusto basi nudo, foliis ovatis acutis in petiolum roseum angustatis glaberrimis supra luride viridibus nervis nervulisque reticulatis sanguineis, subtus roseis, scapo pallide viridi, racemo ovariisque laxe pilosis, vaginis lanceolatis, floribus spicatis, bracteis ovario paullo brevioribus lanceolatis albis roseo-tinctis, perianthio 1 poll. diam. albo, sepalis late ovatis obtusis, postico minore erecto, lateralibus patentibus, petalis linearibus falcatis sepalo postico subcohærentibus, labelli albi basi saccati ungue lineari, limbo stipitato 2-lobo, lobis oblongis truncatis divaricatis, sacco 2-lobo, columna clavata aurea, rostello furcato, anthera rostrata.

H. discolor *var.* Dawsoniana, *Reichb. f. in Trans. Linn. Soc.* vol. xxx. (1874) p. 142. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 102 (in note).

Anœctochilus Dawsonianus, *Low ex Reichb. f. in Gard. Chron.* (1868) p. 1038.

Haemaria is a small genus of Asiatic Orchids, of which only two species are as yet known, *H. discolor*, Lindl. (*Goodyera discolor*, t. 2055), and the plant here figured. These two are so closely allied that Reichenbach from imperfect specimens of *H. Dawsoniana* described it as a variety of *discolor*, at the same time overlooking the fact that it had already been published as an *Anœctochilus* by Low in 1868, also under the name of *Dawsonianus*.

Referring to the plate of *H. discolor* cited above, or better to a figure in the *Botanical Register*, t. 271, it will be seen that it is a much more robust, more glabrous plant, with very dark green whole-coloured leaves edged with red, and having smaller flowers. The genus is allied to *Anœctochilus*, but the sac of the lip is concealed between the bases of the lateral sepals, otherwise the genera are exceedingly alike.

H. Dawsoniana is a native of Burma, where it was discovered, I believe, by the Rev. Mr. Parish in the Moolmain district. Living specimens have been received at the

Royal Gardens, Kew, from those at Calcutta. It flowers in a stove in the month of January.

Descr.—Whole plant eight to ten inches high. *Stem* as thick as a goose-quill, leafless below, but bearing one or more tubular membranous sheaths, pale green. *Leaves* two to four inches long, petioled, ovate, acuminate, dark green above and tessellated with nine to twelve pairs of longitudinal and oblique transverse blood-red nerves, margins blood-red, beneath rose-colrd.; base narrowed into a stout, rose-colrd. deeply concave petiole. *Scape* with spike six inches long, slender, together with the bracts and ovaries pubescent with flaccid hairs; sheaths few, lanceolate. *Spike* many-fld.; bracts as long as the ovaries, lanceolate, pale greenish, or white suffused with rose. *Flowers* horizontally spreading, about one inch in diameter, pure white, with the column and anther yellow. *Ovary* sessile, two-thirds of an inch long. *Sepals* ovate, obtuse, lateral spreading; dorsal smaller, erect. *Petals* erect; coherent with the dorsal sepal, linear, falcate. *Lip* as long as the sepals, base saccate; claw broadly linear, suddenly contracted into a short stipes for the limb, which consists of two divergent, oblong, truncate lobes; sac globose, two-lobed. *Column* stout, tip turned to one side; rostellum forked. *Anther* lanceolate, beaked. *Pollinia* narrowly clavate, of about six rows of flattened granules, stalked; stalks inserted on an oblong gland.—*J. D. H.*

Fig. 1, Flower; 2 and 3, column and lip viewed from opposite sides, showing the twist of the top of the column; 4, rostellum and anther; 5 pollinia:—*All enlarged.*

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Tab. 7487.

SANSEVIERIA Roxburghiana.

Native of the East Indies.

Nat. Ord. Hæmodoraceæ.—Tribe Ophiopogoneæ.

Genus Sansevieria, *Thunb.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 679.)

Sansevieria *Roxburghiana*; foliis 2–2½ pedalibus anguste lineari-ensiformibus strictis erectis a basi ad apicem teretem obtusum sensim angustatis dorso rotundatis 7–9-costatis, supra (apice excepta) concavis striatis viridibus fasciatis rubro anguste marginatis, scapo foliis breviore, vaginis appressis acuminatis, racemo elongato gracili stricto anguste cylindraceo subdensifloro, floribus secus rachim teretem fasciculatis, fasciculis 3–6-floris, pedicellis brevibus basi bracteolatis, perianthii pallidè flavo-virescentis, tubo ½-pollicari gracili lobis linearibus obtusis revolutis longiore.

S. Roxburghiana, *Schult. fil. Syst. Veg.* vol. vii. p. 357. *Kunth Enum. Pl.* vol. v. p. 18. *Baker in Journ. Linn. Soc.* vol. xiv. (1875) p. 549. *Hook. f. Flora Brit. Ind.* vol. vi. p. 271.

?S. lanuginosa, *Willd. Sp. Pl.* vol. ii. p. 160. *Kunth l. c.* 19. *Baker l. c.*

S. zeylanica, *Roxb. Corom. Pl.* vol. ii. p. 45, t. 184; *Flor. Ind.* vol. ii. p. 161 (*non Willd.*).

Sansevieria, *Wall. Cat.* n. 5054, et p. 215.

?Katu Kapel, *Rheede Hort. Malab.* vol. xi. p. 83, t. 42.

Múrvá, *Jones in As. Research.* vol. iv. p. 271.

It is a curious fact, that except Roxburgh's excellent figure and description in the "Plants of Coromandel," published a century ago, and of which the description is repeated in his "Flora Indica," I can find no reliable account of this remarkable and economically useful plant in any Indian botanical work. Nor can this be accounted for by Roxburgh's having assumed it to be the very different *S. zeylanica* of Willdenow, for as far as India is concerned the history of that plant is as obscure as is that of *S. Roxburghiana*. A third Indian species (real or supposed) of *Sansevieria*, is *S. lanuginosa*, Willd. (Baker, l. c.) for which the only authority is Rheede's "Hortus Malabaricus," where it is figured (vol. xi. p. 83, t. 42), and described as having leaves with dorsal woolly striæ, a character unknown in any other species of the genus, and hence open to suspicion. In general appearance the

figure of *S. lanuginosa* accords with *S. Roxburghiana*, as does the inflorescence; but what is very singular is, that Rheede, though dwelling on the medicinal value of the leaves of his plant, says not a word of its uses as yielding a fibre. Rheede gives as its habitat, Malabar in sandy places. Roxburgh says of his plant that in Coromandel it grows very commonly under bushes in thin forests, in almost every soil, flowering from January till May; and adds an account of its cultivation, and the preparation and uses of the fibre. Referring to the Kew Herbarium, I find a specimen from Rottler's Herbarium named *S. lanuginosa*, Willd., with perfectly glabrous leaves, and according, in all respects, with *S. Roxburghiana*; and others from the Island of Antigua, where it is naturalized. In the many works on the economic products of India in which the native *Sansevieria* is mentioned as a cordage-yielding plant, it is impossible to say whether *S. Roxburghiana* or *zeylanica* is meant. The latter, of which a good figure is given in the *Botanical Register* (t. 160) is a reputed native of Ceylon, and is said to be cultivated for its fibre in India. Mr. Baker informs me that *S. zeylanica* is a native of South and probably also of Tropical Africa. In conclusion, it must be left to Indian botanists to clear up the history of the Indian Sansevierias, a plant which may prove of great value, now that the fibre-yielding Aloes Agaves and their allies are attracting so much attention in the British market.

The specimen of *S. Roxburghiana* here figured, and which precisely accords with Roxburgh's description and the drawing in his unpublished Icones at Kew, was received by Messrs. Veitch from Burma, and flowered in the Royal Gardens, Kew, in July, 1895.

Descr.—*Stem* very short. *Leaves* about 8–9 in a tuft, two to two and a half feet long, by one inch broad towards the middle, suberect, rigid, dagger-formed, concave above, and ending in a terete point nearly two inches long, pale green fasciated with darker green narrowly bordered with red, upper surface concave, striated, lower rounded, about a quarter of an inch thick from back to front, margin thin, lowest leaves shorter and broader. *Peduncle* a foot long, cylindric, green. *Raceme* one to one and a half feet long, by one and a half to two inches in

diameter, strict, erect, cylindric. *Flowers* in fascicles of three to six, suberect, very shortly pedicelled; bracts minute, ovate, acute, pale green. *Perianth* very pale greenish white, tube narrow, half an inch long, cylindric; lobes about as long as the tube, linear-oblong, obtuse. *Filaments* as long as the perianth-lobes; anthers oblong. *Ovary* trigonous, 3-lobed, lobes pitted at the top; styles filiform, exserted, stigma minute. *Fruit*, according to Roxburgh, of two to three pisiform, orange-coloured, 1-seeded berries.—*J. D. H.*

Fig. 1, Flower; 2, portion of do. laid open; 3 and 4 anthers; 5, ovary:—*All enlarged.*

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Tab. 7488.

CYRTANTHUS Huttoni.

Native of the Cape Colony.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Cyrtanthus, *Ait.*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 729.)

Cyrtanthus *Huttoni*; bulbo globoso, tunicis exterioribus membranaceis brunneis, foliis circiter 4 synanthiis ensiformibus glabris viridibus suberectis scapo brevioribus, scapo valido tereti elongato, umbellis 6–10-floris, spathæ valvis 2 ovatis brunneis membranaceis, pedicellis elongatis, perianthio anguste infundibulari rubro intus luteo lobis ovatis tubo duplo brevioribus, staminibus prope faucem tubi insertis filamentis brevissimis, stylo elongato.

C. Huttoni, *Baker Handb. Amaryllid.* p. 55.

This recently introduced *Cyrtanthus* is much more robust than *C. angustifolius* (Bot. Mag., tab. 271), and its numerous allies, but is not nearly so large in its flowers as *C. obliquus*. It was first flowered at Kew in May, 1864, from plants sent by Mr. J. Hutton from the south-eastern district of Cape Colony. A specimen was sent to Kew from Glasnevin in 1884; and from the province of Somerset East, from Mr. James O'Brien in 1890. The plants now grown at Kew were raised from seeds received from the Edinburgh Botanic Garden in 1892. Like all the other species it requires the shelter of a cool frame in an English garden. **The flowers are not scented.**

Descr.—*Bulb* globose, an inch or an inch and a half in diameter. *Leaves* about four to a bulb, contemporary with the flowers, ensiform, bright green, arcuate, glabrous, above a foot long, nearly an inch broad. *Peduncle* stout, terete, a foot and a half or two feet long. *Flowers* six to ten in an umbel; spathe-valves two, ovate, brown, membranous; pedicels an inch or an inch and a half long. *Perianth* narrowly funnel-shaped, an inch and a half long, bright red outside, yellow within; lobes ovate, half as long

as the tube. *Stamens* inserted near the throat of the perianth-tube; filaments very short; anthers small, oblong. *Style* about as long as the perianth-tube.—*J. G. Baker.*

Fig. 1, A flower cut open; 2, front view of anther; 3, back view of anther; 4, pistil, complete:—***All enlarged.***

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Tab. 7489.

SARCOCHILUS hainanensis.

Native of the Island of Hainan.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Sarcochilus, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 575.)

Sarcochilus (Cuculla) *hainanensis*; caule elongato radicante robusto, foliis 4–5-pollicaribus lineari-oblongis obtusis, vaginis brevibus, racemis secundis patentibus et decurvis crasse pedunculatis compressis, bracteis rachi adnatis brevibus distiche imbricatis ovatis obtusis carnosis, floribus 2-pollicaribus, perianthio angusto falcato aureo, sepalis petalisque consimilibus anguste linearibus falcatis conniventibus, labello parvo sacciforme puberulo, lobis lateralibus parvis triangularibus obtusis, terminali crasso conico obtuso basi intus squama parva obtusa instructo, sacco late conico apice rotundato 2-lobo intus basi villoso, columna brevi, **anthera hemispherica, polliniis oblongis.**

The genus *Sarcochilus* is a very large tropical Eastern Asiatic one, the species of which have never been reduced to a system, and, being polymorphous, may offer characters for the establishment of several genera. In the "Flora of British India" I brought thirty-five species, more than half of which were new, and some of the rest taken out of genera to which they did not belong, under *Sarcochilus*, dividing them into nine sections. Of these sections *Cuculla*, to which *S. hainanensis* belongs, is one of the best marked, on account of the compressed rachis of the raceme, with pectinately arranged, imbricating, persistent bracts. The flowers appear to come out two at a time in the species here figured, one from each of two adjacent bracts, the rachis of the raceme probably having a very long duration.

The plant here figured was one amongst a collection of Orchids made in the Island of Hainan in Southern China, which was sent in 1894 to the Royal Gardens, Kew, by the Director of the Botanical Gardens of Hong Kong. It flowered in a stove in July of the same year.

Descr.—*Stem* (in the specimen figured) six inches high, erect and leafy, but probably attaining a much greater length, and becoming pendulous, as thick as a goose-quill,

flowering or rooting, or both, towards the middle of almost every internode, the peduncles or roots bursting through the leaf-sheaths; internodes one-half to three-quarters of an inch long, wholly sheathed. *Leaves* about four inches long, by three-quarters of an inch broad, linear-oblong, obtuse, coriaceous, dark green above, deeply furrowed, paler and keeled beneath, margins subrecurved. *Peduncles* together with the racemes about as long as the leaves or shorter, horizontal and decurved, stout, cylindric; rachis of raceme stout, compressed; bracts confluent with the rachis, about half an inch long, ovate, obtuse, distichous, green, tipped with brown, closely imbricate, except towards the base. *Flowers* one and a half inch long, pendulous on short white pedicels, falcate. *Sepals* and *petals* similar, very slender, narrowed from the base to the subacute tip, golden-yellow. *Lip* very small, white sprinkled with pale red, sessile on the base of the column, saccate, puberulous; side lobes very short, erect, triangular; midlobe short, conical, obtuse, with a small scale at its base within; sac or spur hardly longer than the midlobe; base broadly 2-lobed villous within. *Column* very short. *Anther* hemispheric.—*J. D. H.*

Fig. 1, Column and lip; 2, the same, with the lip bisected; 3, column; 4, anther; 5 and 6, pollinia:—*All enlarged.*

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Tab. 7490.

ADONIS amurensis.

Native of Manchuria and Japan.

Nat. Ord. Ranunculaceæ.—Tribe Anemoneæ.

Genus Adonis, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 5.)

Adonis (Consiligo) *amurensis*; perennis, robusta, glabra v. sparse pilosa, caule basi aphyllo longe vaginato superne folioso, foliis (spuriis e. fol. 2–3 confluentibus constantibus) caulinis petiolatis (supremis sessilibus) amplis ambitu fere orbicularibus 3-sectis segmentis pinnatisectis, pinnulis anguste oblongis argute pinnatifidis, petiolo (axi secundario) robusto vagina elongata membranacea instructo, floribus breviter pedunculatis amplis, sepalis oblongis obtusis, petalis 20–50 sepalis paullo longioribus anguste obovatis subspathulatisve versicoloribus, carpellis subglobosis stylo elongato recurvo, maturis dense pubescentibus stylo uncinato.

A. amurensis, *Regel & Radde, Bot. Abtheil. Radde Reis. Sud-Ost Sibir.* vol. i. (1861) p. 33, t. 2, f. 1, 2; et in *Bull. Soc. Nat. Mosc.* (1861) vol. ii. p. 35, t. 2, f. 1, 2. *F. Schm. Reis. in Amurl. et Ins. Sachal.* pp. 30, 104. *Franch. in Bull. Soc. Philom. Paris. Ser.* 3, vol. vi. pp. 84, 88. *Hemsl. in Gard. Chron.* (1887) vol. ii. p. 491.

Fu Ku Jusō Shin Dsu. (Figures of varieties of Adonis amurensis).

A. apennina, *var.* γ, dahurica, *Maxim. Prim. Fl. Amur.* p. 491.

Adonis amurensis was discovered on or near the Bareya Mts., on the right bank of the lower Amur river, Lat. 50 N., in what are now called the Amur Provinces of Russia; and it has since been found in Islands of Sachalin, Jesso, and in the north of Nippon. It was first described by Maximovicz from a very imperfect specimen as a variety of *A. apennina*, but was subsequently discriminated by Regel and Radde, and still more recently studied by Franchet, in a valuable paper cited above, and entitled "on the perennial species of *Adonis* and their geographical segregation." In this paper Franchet points out that the apparent petiole with trisect leaf is really an arrested axis bearing two or three leaves, of which the petioles resemble the divisions of a single petiole, and were mistaken for them. The so-called leaf is therefore a branch, inserted in the axis of a leafless or almost leafless sheath. This arrangement Franchet regards as common to most probably all the species of the *Consiligo* group of *Adonis*; they

are in fact branching herbs, though, as in *A. amurensis*, the main axis may be the only flowering one.

The Japanese work cited above consists of twenty-one figures of varieties, or more probably garden sports of *A. amurensis*, of all sizes, with single and double flowers, white, grey, yellow, green, purple, rose-colrd. and scarlet. Some are double, like "bachelor's buttons;" others have five laciniate petals, like a *Dianthus*. The sepals are often represented as ovate, acuminate, and very dark-colrd., and there are deviations from the type which might excite suspicion as to the good faith of the artist.

The figure of the plant here given is from a specimen that flowered in a cool house of the Royal Gardens in February of this year. The red flower, fig. 3, is from the Japanese work.

Descr.—A glabrous or sparsely hairy perennial-rooted herb. *Stem* eight to eighteen inches high, simple or branched, as thick as a swan's quill, leafless below, but clothed with long membranous pale sheaths an inch long and more, the upper of which have sometimes foliaceous tips. *Cauline leaves* (really 2–3 connate leaves) three to six inches long and broad, the lower stalked, the upper sessile, orbicular-ovate in outline, trisect to the base; segments (true leaves) pinnatisect to the base; segments crowded, linear-oblong, pinnatifidly acutely incised, dark green above, pale beneath; petiole (a branch or secondary axis) of the lower leaves three inches long or more, very stout, connate with, or in the axil of a linear membranous sheath. *Flowers* two inches in diameter, shortly stoutly peduncled, golden-yellow, white, rose-colrd., or bright red. *Sepals* oblong, obtuse, concave, greenish or brownish dorsally. *Petals* twenty to fifty, rather longer than the sepals, narrowly oblong-obovate, or subspathulate, tip rounded entire or erose. *Stamens* very many, about one-third the length of the petals; anthers small, oblong, yellow. *Carpels* in a globose head, subglobose, pubescent; style as long as the ovary, recurved; ripe carpels globose, densely pubescent, style uncinate and recurved on the ovary.—*J. D. H.*

Fig. 1, Stamen; 2, carpels:—*both enlarged*; 3, flower from the plate in the Fu Ku Jusō Schin Dsu, *of the natural size.*

M.S. del. J.N.Fitch lith.

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Tab. 7491.

SOLANUM cernuum.

Native of South Brazil.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Solanum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 888.)

Solanum (Pachystemonum) *cernuum*; arbuscula orgyalis, caudice valido erecto apice ramoso ramis crassis petiolis costa foliorum subtus cymæque ramis ramulisque pilis flexuosis brunneis undique dense crinitis, foliis amplis oblongis obovatisve acuminatis marginibus undulatis basi rotundatis in petiolum brevem crassum angustatis supra lævibus nervis utrinque 6–10, marginibus undulatis, subtus nervosis tomentoso-leprosis albido-spadiceis, junioribus utrinque sparse stellato-pubescentibus, racemis suboppositifoliis decurvis pedunculo brevi ramisque crassis, floribus confertis brevissime pedicellatis pollicem diametro albis, calyce brevi subcampanulato inæqualiter 4–5 lobo post anthesin inflato baccam tegente, lobis ovatis obtusis stellatim pilosis, corolla 5-partita, antheris oblongis poris introrsum spectantibus, ovario apice piloso, bacca globosa hirsuta.

S. cernuum, *Velloz. Fl. Flum.* p. 84. *Ill.* vol. ii. t. 103. *Mart. Reise*, vol. i. p. 282; *Syst. Mat. Med. Veg. Bras.* p. 10. *Sendtn. in Mart. Fl. Bras.* vol. x. p. 42.

S. paleatum, *Schott mss. in Herb. Vind.* n. 5419.

S. jubatum, *Dunal mss. in Herb. Banks ex DC. Prodr.* vol. xiii. *pars.* i. p. 132. *Wawra Bot. Reis. Pr. Saxe-Coburg*, vol. i. t. 66.

A very-singular looking plant, from its stout habit and the dense clothing of long flexuous chaffy, sometimes secund hairs resembling the fur of an animal, and giving rise to the Portuguese name of Bolsa de Pastor, or "Braco de Preguiça," arm of the ant-eater. It is a native of the provinces of Rio and Minas Geraes, growing in stony soil in the deciduous forests, and is a reputed sudorific of the Brazilian Pharmacopœa. The drawing here reproduced gives no idea of the size and robustness which the branches and petioles attain, or the length and breadth of the leaves, or size of the cymes, which are sometimes as large as the fist.

Dunal in De Candolle's Prodromus, adopted *jubatum*, a ms. name of his own, for this plant, in place of the earlier *cernuum* of Vellozo, and this though Vellozo's had been taken up by Martius and by Sendtner. Dunal gives as his only reason that Vellozos's name was not sufficiently

applicable ("non satis congruens.") I suppose that he overlooked the decurved or drooping inflorescence, which is represented in Vellozo's figure, as well as in that of Waura, and of this work, from any of which it may be seen that the name *cernuum* is very appropriate.

Descr.—A small tree or subarboreous shrub, with an erect cylindric stem or trunk, six to eight feet high, naked below, and furnished with short branches at the top; upper part of the stem, branches, midrib of leaves beneath, branches of the cyme and calyces crinite with long brown flexuous chaffy hairs, nearly a quarter of an inch long. *Leaves* up to two feet long, broadly oblong or obovate, acuminate, base rounded or narrowed below into a very stout petiole, margins undulate, above bright green and shining with eight or more pairs of arching nerves, beneath white, with scattered or appressed silvery or brown scurf and stellate hairs; young leaves stellately hairy on both surfaces. *Cymes* drooping, sub-leaf-opposed; peduncle short, and branches stout, green except for the brown hairs; flowers an inch in diameter, subsessile, pure white with golden anthers. *Calyx* subcampanulate, crinite, very unequally three to five-cleft; lobes obtuse, or if of connate lobes then fewer and cleft at the apex. *Corolla-lobes* ovate, acute. *Stamens* short; anthers oblong, lobes obtuse, pores towards the apex opening towards the style. *Ovary* oblong, top hairy; style slender, stigma narrowly clavate. *Berry* (as described by Martius) globose, hirsute, enclosed in the enlarged calyx.—*J. D. H.*

Fig. 1, Stellate hairs from the undersurface of the leaves; 2, calyx; 3, anthers; 4, pistil:—*All enlarged.*

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CONTENTS OF No. 620, AUGUST, 1896.

TAB. 7487.—SANSEVIERIA ROXBURGHIANA.
„ 7488.—CYRTANTHUS HUTTONI.
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Tab. 7492.

CHONEMORPHA MACROPHYLLA.

Native of India and the Malay Islands.

Nat. Ord. Apocynaceæ.—Tribe Echitideæ.

Genus Chonemorpha, *G. Don.* (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 720.)

Chonemorpha *macrophylla*; frutex scandens glaber v. pubescens, ramis crassiusculis teretibus, foliis amplis orbicularibus ovatis obovatisve cuspidatis basi cuneatis rotundatis cordatisve sæpius pubescentibus, nervis utrinque costæ 10–12 arcuatis nervulisque transversis creberrimis prominulis, cymis axillaribus et pseudoterminalibus breviter-pedunculatis paucifloris, ramis divaricatis, bracteis minutis ovatis, pedicellis crassiusculis, calyce oblongo tereti breviter 5-fido demum tabescente brunneo medio constricto tubum corollæ arcte cingente, corollæ tubo gracili 1½–poll. longo, limbi 3-poll. diam. lobis trapeziformibus, disco 5-lobo, folliculis 12–18-pollicaribus.

C. macrophylla, *G. Don Gen. Syst. Gard.* vol. iv. p. 76. *A.DC. Prodr.* vol. viii. p. 430. *Wight Ic. Pl. Ind. Or.* t. 432. *Brandis For. Flor. N W. Ind.* p. 328. *Kurz For. Flor. Brit. Burm.* vol. ii. p. 187. *Hook. f. Fl. Brit. Ind.* vol. iii. p. 661. *Gamble Trees, &c., of Darjeeling*, p. 56.

?C. grandiflora, *G. Don l. c.*

C. mollis, *Miquel Fl. Ind. Bat.* vol. ii. p. 444, *fide Kurz in Journ. As. Soc. Beng.* vol. xlvi. pars II. (1877) p. 257.

Echites macrophylla, *Roxb. Fl. Ind.* vol. ii. p. 13. *Wall. Cat.* n. 1657.

E. grandis, *Wall. l. c.* n. 1658. *Grah. Cat. Bomb. Pl.* p. 113. *Dalz. & Gibs. Bombay Flor.* p. 147.

?E. macrantha, *Spreng. Syst. Veg.* vol. i. p. 632. *A.DC. l. c.* p. 477.

Epichysianthus macrophyllus, *Voigt Hort. Suburb. Calcutt.* p. 523.

Belutta-Kaka-Kodi, *Rheede Hort. Malab.* vol. ix. t. 5, 6.

One of the commonest and handsomest of the white-flowered climbing shrubs of Indian tropical forests, extending from the foot of the Himalaya in Kumaon, eastward along the whole range, and southward to Travancore, Ceylon, the Andaman Islands, Malayan Peninsula, Sumatra and Java. Throughout this wide range of distribution it presents little variation except in the size and shape of the leaves, their hairyness, and somewhat in the dimensions of the corolla. In the forests of Sikkim, where it reaches an elevation of 6000 ft., it climbs the loftiest trees, often covering their tops with a white sheet of flowers. On in-

cision the trunk yields a white coagulable milk, which is described by Gamble as "a good sort of Caoutchouc."

Chonemorpha macrophylla was raised at the Royal Gardens, Kew, from seeds sent from those of Calcutta in 1884. The plant is trained against a rafter in the Victoria Regia House, where it develops its sweet-scented flowers in July.

Descr.—A very large scandent shrub, more or less pubescent, or with the leaves almost hirsute beneath; branches stout, terete. *Leaves* large, up to ten inches long and broad, opposite, shortly petioled, from orbicular to ovate or obovate, cuspidate, base cuneate, rounded, or subcordate, dark green above with ten to twelve pairs of sunk arching nerves, beneath always more or less pubescent, very pale green, with prominent nerves and cross-nervules; petiole terete. *Flowers* in subterminal shortly peduncled cymes, with widely spreading terete green branches and pedicels speckled with red; pedicels one half to three-fourths of an inch long; bracts minute, ovate, acute, brown. *Calyx* three-fourths of an inch long, tubular, terete, unequally shortly 5-lobed, at length on withering red-brown and tightly constricting the tube of the corolla. *Corolla* white, tube proper very short, hairy within, produced into a tubular terete throat an inch and a half long above the insertion of the stamens; limb three inches broad, lobes broadly obliquely triangular or trapezoid from a very narrow base, white, yellowish towards the narrow mouth. *Stamens* inserted at the mouth of the tube at the bottom of the long throat, filaments very short, pubescent; anthers sagittate. *Disk* five-lobed. *Ovary* two-grooved, narrowed into a long two-grooved style which is hairy at the top and terminated by a conical bifid stigma constricted at the base. *Fruit* of two long straight hard trigonous follicles, twelve to eighteen inches long. *Seeds* flat with a long tuft of hair.—*J. D. H.*

Fig. 1, Base of calyx and corolla bisected; 2 and 3, stamens; 4, ovary and disk:—*All enlarged.*

2
3
4
1

Tab. 7493.

DENDROBIUM Leonis.

Native of the Malay Peninsula.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Aporum) *Leonis*; caulibus cæspitosis compressis foliosis, foliis persistentibus distichis equitantibus verticalibus late ovatis obtusis crasse coriaceis enerviis, vaginis brevibus membranaceis applanatis, floribus in apicibus ramorum solitariis, pedicellis brevibus bracteis scariosis demum laceris vaginatis, floribus ¾ poll. longis, sepalis lateralibus triangulari-rotundatis aureis basi fusco-sanguineo striolatis in mentum latum rotundatum cum columna confluentibus, dorsali multo minore ovato-rotundato, petalis ellipticis obtusis sepalum dorsale æquantibus, labello lineari-oblongo recurvo integro ecristato, disco paullo incrassato sanguineo striato apice late rotundato incrassato hispidulo aureo, anthera vertice biloba.

D. Leonis, *Reichb. f. in Walp. Ann. Bot.* vol. vi. p. 280. *Hook. f. Fl. Brit. Ind.* vol. v. p. 723; *in Ann. Roy. Bot. Gard. Calcutt.* vol. v. part I. p. 7, tab. 10.

Aporum Leonis, *Lindl. in Bot. Reg.* (1840) *Misc.* p. 59. *Griffith in Calc. Journ. Nat. Hist.* vol. v. (1845) p. 368.

A. indivisum, *Lindl. in Wall. Cat.* n. 2081; *Gen. & Sp. Orchid.* p. 70 (*non Blume*).

The curious Orchid here figured was introduced from Singapore sixty years ago by the famous botanical collector Cuming, who sent it to Loddiges, under the local name of "Lion's mouth," given it from a fancied resemblance of the flower to the open mouth of that animal, the lip representing its tongue. It had been previously found by Mr. Prince, who sent it to Dr. Wallich, then Superintendent of the Calcutta Gardens, with a rude drawing from which Dr. Lindley erroneously referred it to *Aporum indivisum* of Blume. *A. Leonis* is probably common in the Malaya Peninsula, having been found in Perak, Malacca, Singapore, and extending thence to Java. Mr. Ridley informs me by letter that the flowers are exquisitely scented of Vanilla.

The section *Aporum*, to which *D. Leonis* belongs, differs widely in habit from other *Dendrobias*, owing to the vertical direction (that is the lateral compression) of the evergreen distichous leaves, the anatomical study of which

would be worth undertaking. One species has been previously figured in this work, *D. anceps*, Sw. of Bengal, t. 3608, which has axillary flowers with minute bracts. In *D. Leonis* the bracts in some specimens have broken up into a brush of brown fibres, out of which the flower arises.

Plants of *D. Leonis* were received at the Royal Gardens from Mr. Curtis, F.L.S., Assistant Superintendent of the Garden and Forest Department of Penang, who procured them from Perak in the adjoining Peninsula. One of these flowered in a tropical House in April of this year.

Descr.—*Stems* tufted with fibrous roots, branching from the base; branches four to six inches long, one and a half inch broad across the distichous leaves which clothe the branches from base to apex. *Leaves* about an inch long, ovate-oblong, obtuse, equitant and distichously imbricating, their flattened scarious sheaths embracing the broad flattened stem, dark green, hard and fleshy, quite smooth, nerveless; sometimes, when the internodes are lengthened, the leaf breaks away from the scarious sheath, and the latter presents a truncate face of a pale grey colour contrasting with the dark green of the adjacent leaves. *Flowers* solitary, and very shortly pedicelled at the ends of the branches, about three-fourths of an inch long by nearly as broad, of a dirty golden-yellow, streaked with dull purple at the base of the lateral sepals and lip. *Lateral sepals* much larger than the rest of the flower, very broadly ovate, obtuse, connate with the foot of the column into a rounded mentum; dorsal sepal very small, orbicular-ovate. *Petals* about as large as the dorsal sepal, ovate-oblong, obtuse. *Lip* as long as the lateral sepals, linear-oblong, undivided, disk with a thickened median band terminating in a rounded broad thickened setulose tip. *Column* very short. *Anther* hemispheric, crown 2-lobed. —*J. D. H.*

Fig. 1, Flower with the lip removed; 2, lip; 3, anther; 4, pollinia:—*All enlarged.*

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Tab. 7494.

BAUHINIA Galpini.

Native of the Transvaal.

Nat. Ord. Leguminoseæ.—Tribe Bauhinieæ.

Genus Bauhinia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 575.)

Bauhinia (Phanera) *Galpini*; frutex subscandens fere glaberrimus, ramulis rufo-puberulis, foliis petiolatis orbicularibus v. transverse late oblongis breviter 2-lobis, 7-nerviis, basi rotundatis v. truncatis, lobis rotundatis, subtus glabris puberulisve, petiolo lamina $\frac{1}{2}$ v. $\frac{3}{4}$ breviore, stipulis parvis subulatis, racemis terminalibus et oppositifoliis 6–10-floris, rachi pedunculis calycibusque ferrugineo-puberulis, bracteis parvis subulatis, calycis tubo subpollicari recto, limbo tubo subæquilongo spathaceo, petalis 1–$1\frac{1}{2}$ poll. longis coccineis, limbo orbiculari cuspidato ungue æquilongo, staminibus 3 perfectis cæteris brevibus subulatis, antheris flavis, ovario pubescente, stigmate capitellato, legumine 3–5-poll. longo lineari-oblongo compresso basi attenuato apice decurvo rostrato dorso alte costato, seminibus oblongis.

B. Galpini, *N. E. Br. in Gard. Chron.* (1891) vol. i. p. 728. *Oliver in Hook. Ic. Pl.* t. 1994.

According to a note accompanying dried specimens in the Kew Herbarium, *Bauhinia Galpini* was discovered by Mr. W. Nelson at Dorn Spruit Spelunken, under the tropic of Capricorn, in 1880. Specimens have since been received from other localities in the Transvaal, as Baberton, the De Kaap Valley, &c., by Messrs. Thorncroft, Wood, &c.; and both seeds and dried specimens from Mrs. K. Saunders of Torgaati, Natal, where the plant is cultivated. It advances far into the tropic, Mr. Last having found it in the Makua country, Mozambique. At Baberton it appears to be a common shrub, clothing the hills in great masses five to ten feet high, conspicuous by the bright scarlet flowers.

In the Royal Gardens it has attained a height of eight feet in the Succulent House, where it flowered for the first time in October, 1895.

Descr.—A half climbing shrub, five to ten feet high; bark brown, of young shoots rusty-puberulous. *Leaves* petiolate, one to three inches long, orbicular or transversely broadly oblong, broadly 2-lobed from one-fifth to one-half their length, 7-nerved, base rounded or truncate, pale

green above, still paler and glabrous or puberulous beneath; petiole about one-fourth of an inch; stipules minute, subulate, deciduous. *Racemes* leaf-opposed on short lateral shoots, 6–10-fld.; peduncle short, and rachis pedicels and calyx rusty-puberulous; bracts one-eighth to one-quarter of an inch, subulate, fugacious. *Calyx-tube* three-fourths to one and a quarter inch long, cylindric, limb about as long as the tube, spathaceous. *Petals* one to one and a half inch long, crimson or scarlet, claw as long as the orbicular cuspidate limb. *Stamens* three fertile, the remainder reduced to short subulate filaments, fertile nearly as long as the petals; anthers yellow, linear-oblong. *Ovary* long-stipitate, rusty-pubescent; style pubescent, stigma capitate. *Pod* three to five inches long by nearly one inch broad, flat, narrowed into a stipes at the base, and into a decurved beak at the apex, convex margin with two strong keels. *Seeds* half an inch long, oblong, compressed, dark brown.—*J. D. H.*

Fig. 1, Flower with calyx and corolla removed; 2 and 3, stamens; 4, ovary; —*all enlarged*; 5, legume, and 6, seed, both of the *nat. size*.

M.S.del. J.N.Fitch lith.

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Tab. 7495.

RHODODENDRON Smirnovi.

Native of Trans-Caucasia.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron (Eurhododendron) *Smirnovi*; subarboreum, ramulis robustis foliisque subtus lana griseo-alba appressa opertis, foliis lineari-oblongis obtusiusculis in petiolum robustum brevem griseum angustatis crasse coriaceis marginibus subrecurvis supra saturate viridibus subopacis, costa pallida subtus valida nervisque obscuris lana opertis, floribus in corymbum magnum globosum dense aggregatis breviter pedicellatis, pedicellis robustis calyceque brevi obtuse 5-fido lanatis, corolla ampla infundibulare pallide rosea v. alba profunde 5-fida, tubo brevi, lobis amplis patulis rotundatis marginibus undulato-crispatis saturatius roseis, dorsali punctato, staminibus 10 declinatis filamentis roseis infra medium pilosis antheris aureis, ovario conico-cylindraceo tomentoso 5-loculari, stylo incurvo rubro stigmate truncato.

R. Smirnovi, *Trautv. ex Regel in Gartenfl.* vol. xxxiv. (1885) p. 335, and vol. xxxv. (1885) t. 1226, f. 11, d-g. (execrabilis).

Two noble species of Rhododendron, *R. Smirnovi* and *R. Ungerni*, showing a marked affinity in foliage with some Himalayan congeners, have comparatively recently been discovered in the mountains South of the Caucasus by Baron Ungern Sternberg of Artwin. Both occupy a region intermediate between those of *R. ponticum*, which ascends to 5000 ft., and below that of *R. caucasicum*, which descends to 8000 ft., where they form small bushy trees, fifteen to twenty feet high. The more precise locality is 100 versts (about sixty-six miles) from Batoum. Dried specimens of both were sent by the Baron to M. Smirnow, by whom they were communicated to Prof. Trautvetter of St. Petersburgh, and were there described by Dr. Regel in the work cited above. Later, seeds of both were obtained by Massalsky, a collector for the Imperial Botanical Garden of St. Petersburgh, a portion of which were sent to Kew by Dr. Regel in 1866, and from these the plant here figured was raised. It flowered when only a foot high, in the early part of May, 1894. Mr. Watson informs me that it is perfectly hardy at Kew, forming a

compact bush, with thick leathery leaves, and that seedlings from crosses with it and other garden forms of the genus are now growing at Kew.

Of the Himalayan species, *R. Smirnovi* is nearest to *R. lanatum* in foliage, differing from it and from all the large Indian species with woolly undersurfaces of the leaves in the infundibular corolla.

Descr.—A small robust tree, fifteen to twenty feet high; branches stout, compact, young clothed with a grey felted wool, as are the leaves beneath petioles pedicels and calyx. *Leaves* three to five inches long, by one to one and a quarter broad, narrowed into a stout petiole, elliptic-oblong, subacute, thickly coriaceous, margins subrecurved, upper surface dark green with a yellowish sunken midrib, and very obscure nerves, under grey-white or very pale brown, with a stout midrib; nerves six to eight pairs; petiole half an inch long. *Flowers* in a compact globose sessile head six inches in diameter; pedicels short, stout. *Calyx* a small tomentose 5-lobed cup; lobes broadly ovate, obtuse. *Corolla* funnel-shaped, with a short tube, and very large open corolla, three inches in diameter, rose-red; lobes rounded, with broad crisped and curled darker rose-colrd. margins; upper lobe speckled on the disk with scattered oval brownish spots. *Stamens* 10, declinate; filaments slender, rose-colrd., hairy in the lower half; anthers oblong, yellow. *Ovary* cylindric-conic, tomentose, 5-celled; style recurved, stigma simply truncate.—*J. D. H.*

Fig. 1, Stamen; 2, top of style and stigma; 3, calyx and ovary; 4, transverse section of ovary:—*All enlarged.*

M S del J.N Fitch lith.

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Tab. 7496.

CELMISIA Munroi.

Native of New Zealand.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Celmisia, *Cass.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 278.)

Celmisia *Munroi*; caule robusto, foliis perplurimis 3–8-poll. longis $\frac{1}{3}$–$1\frac{1}{2}$ poll. latis sessilibus anguste lineari-oblongis acuminatis coriaceis subplicatis marginibus recurvis supra laete viridibus pellicula gossypina argenteo-nitidula obtectis enerviis, subtus lana sericea argentea appressa opertis, costa crassa, scapo foliis longiore valido gossypino, bracteis linearibus numerosis elongatis erectis, capitulo 1–$2\frac{1}{2}$ poll. lato, involucri late campanulati bracteis numerosissimis linearibus coriaceis tomentosis erectis recurvisve, flosculis radii perplurimis confertis 2–3-seriatis, tubo glabro, limbi linearis apice 3-crenato, acheniis linearibus obtuse angulatis glabris hispidulisve, pappi setis flexuosis scaberulis.

C. Munroi, *Hook. f. Handb. New Zeal. Fl.* p. 133.

Celmisia Munroi is one of the handsomest of the genus which represents in New Zealand the Asters of other parts of the world. Upwards of thirty species are known to inhabit the Southern Islands of the Archipelago, only two of which are also found in the Northern; and of these two one, *C. longifolia*, Cass., extends to the Alps of Australia and Tasmania. This latter is the only species that ranges throughout the whole length of the New Zealand Islands from the Bay of Islands to Otago.

Many attempts have been made to introduce not a few of the species of *Celmisia* into English gardens, but with little success. In so far as I am aware, only two have been figured from living plants grown in this country, *C. spectabilis*, Hook. f., Tab. 6653, and *C. Lindsayi*, Hook f., Tab. 7134, both of this work.

Messrs. J. Veitch & Sons are the introducers of *C. Munroi*, as they were of *C. spectabilis*. The former was received at Kew, under the name of *C. coriacea*, Hook. f., a closely allied species with leaves and flowers as large, but which differs in the pubescent tubes of the corolla and compressed achenes.

September 1st, 1896.

Celmisia Munroi inhabits the northern half of the Middle Island of New Zealand, at elevations of 1500 to 4500 ft. It was discovered by Dr. Munro of Nelson, in the Upton downs of the Marlborough province, and it has since been found at various localities about Mt. Cook and elsewhere in the Canterbury province.

The plant here figured flowered in a greenhouse of the Royal Gardens in May of the present year, the flower lasting, as Mr. Watson informs me, about a fortnight.

Descr.—Whole plant except the upper surface of the leaves and florets clothed with a snow-white cottony appressed wool. *Stem* short, as thick as the thumb, crowned with a thick mass of erect and recurved linear-lanceolate leaves, and bearing one or more erect single-fld. scapes. *Leaves* sessile, three to eight inches long by one-third to one and a half inches broad, acuminate or subacute, coriaceous, subplicate, margins recurved, midrib very broad at the base, nerves almost parallel, upper surface dark green, clothed with a silvery pellicle, undersurface silvery-woolly with a stout midrib. *Scape* longer than the leaves, stout, erect, clothed with erect linear bracts one to two inches long, that are green above and silvery-tomentose dorsally. *Head* one to two and a half inches broad. *Involucre* broadly campanulate; bracts many-seriate, erect or recurved, linear or subulate, acuminate, dorsally woolly. *Ray-flowers* many, in two to three series, tube glabrous; limb linear, white, two-thirds of an inch long or less, tip 3-toothed. *Disc-flowers* golden-yellow, very many, tube 5-cleft. *Achenes* linear, obtusely angled, glabrous or sparsely hispidulous; pappus-hairs rigid, rather flexuous, unequal, scaberulous.—*J. D. H.*

Fig. 1, Involucral bract; 2, floret of ray; 3, do. of disk; 4, hair of pappus; 5, stamen; 6, style-arms of ray floret:—*All enlarged.*

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CONTENTS OF No. 621, SEPTEMBER, 1896.

TAB. 7492.—CHONEMORPHA MACROPHYLLA.
" 7493.—DENDROBIUM LEONIS.
" 7494.—BAUHINIA GALPINI.
" 7495.—RHODODENDRON SMIRNOVI.
" 7496.—CELMISIA MUNROI.

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Tab. 7497.

ACTINIDIA polygama.

Native of Japan.

Nat. Ord. Ternstroemiaceæ.—Tribe Sauraujeæ.

Genus Actinidia, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 184.)

Actinidia *polygama*; frutex gracilis, alte scandens, glaberrimus, foliis longe petiolatis late ovatis ovato-oblongisve acutis v. acuminatis setuloso-serrulatis membranaceis undulatis basi obtusis rotundatis cordatisve, supra laete viridibus subtus pallidis, nervis utrinque costæ 6–9, petiolis roseis, floribus subglobosis nutantibus in corymbos axillares breve pedunculatos subtrifloros dispositis, sepalis ovato-oblongis obtusis, petalis orbicularibus concavis albo-virescentibus, staminibus perplurimis, ovario glaberrimo, stylo brevi crasso, stigmatibus ad 20 lineari-clavatis radiantibus, bacca oblonga.

Actinidia polygama, *Planch. in Hook. Lond. Journ. Bot.* vol. vi. (1847) p. 302, *in nota*. *Franch. & Sav. Enum. Pl. Japon.* vol. i. (1875) p. 59. *Miquel Ann. Mus. Bot. Lugd. Bat.* vol. iii. (1867) p. 15. *Lauche in Monatschr. Ver. Gartenb. Berl.* vol. xxii. (1879) p. 319, t. 4, fig. 3–8. *Bolle in Deutsch. Garten* (1881) p. 47, *cum Ic. Ito, Koishik. Bot. Gard.* vol. ii. t. 20.

Trochostigma polygamum & T. repandum, *Sieb. & Zucc. in Abhandl. Akad. Muench.* vol. iii. pars. II. (1843), p. 728, t. II. fig. 2.

A graceful copiously branched climber, the branches festooned with leaves of a delicate consistence, and bright pale green colour, thus forming a very ornamental conservatory plant; flourishing also under a verandah in many parts of England, and unprotected in the western counties. The genus to which it belongs is confined to the Eastern Himalaya, China and Japan, 12 species in all being enumerated, of which some may be synonyms, as *A. arguta*, Miq., which is, I suspect, referable to *A. callosa*, Lindl. The name *polygama* is inappropriate in so far as the Kew specimens are concerned, the flowers examined being all hermaphrodite.

The specimen here figured was sent by the Rev. Canon Ellacombe, of Bitton, where it flowered in the open air in June, 1895. At Kew it has the protection of the Temperate House, where it festoons one of the pillars for thirty feet, and flowers annually.

October 1st, 1896.

Descr.—A tall climber; stem slender, clothed with leafing and flowering branches, quite glabrous. *Branchlets* slender, terete; bark lenticillate, red-brown; of flowering branchlets dull olive-green, contrasting with the rose-coloured petioles. *Leaves* three to four inches long, and often as broad, long-petioled, broadly ovate or ovate-oblong, acute, setulosely closely serrulate, membranous undulate, bright green, base cuneate rounded or cordate; nerves six to nine pairs, arched; petiole one to one and a half inches long, slender, rose-colrd. *Flowers* three-quarters of an inch in diameter, subglobose, in usually three-flowered shortly peduncled axillary cymes, pendulous, faintly tinged with green; pedicels half to three-quarters of an inch long, very slender; bracts at their bases minute, setaceous. *Sepals* about half as long as the petals, ovate-oblong, obtuse, green, deciduous. *Petals* orbicular, very concave, incurved. *Stamens* very many in a whorl round the ovary, included; filaments filiform, glabrous; anthers oblong. *Ovary* sessile, oblong, terete, very many-celled; cells small, surrounding a broad axis. *Style* short, stout, crowned with about twenty radiating narrowly clavate stigmas. *Fruit* a many-seeded, oblong, fleshy, yellow-green berry, nearly an inch long—*J. D. H.*

Fig. 1, Portion of margin of leaf; 2 and 3, anthers; 4, ovary; 5, transverse section of do.:—*All enlarged.*

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Tab. 7498.

ALOCASIA REVERSA.

Native of the Philippine Islands.

Nat. Ord. Aroideæ.—Tribe Colocasieæ.

Genus Alocasia, *Schott.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 975.)

Alocasia (Eualocasia) *reversa*; humilis, foliis 5–8 poll. longis deflexis ovatis oblongisve acutis cuspidatisve basi cordatis sinu angusto brevi v. ad petiolum extenso, nervis utrinque 4 cum basilari reversa, supra griseo-viridibus secus costam et nervos late saturate viridibus, margine anguste aureo, subtus pallide viridibus, petiolo 6-pollicari tereti pallide viridi, vaginis pallidis membranaceis apicibus nudis v. subfoliaceis, scapo 4–5-pollicari pallido, spatha $2\frac{1}{2}$-pollicari alba, tubo ovoideo, limbo tubo duplo longiore oblongo acuto demum revoluto purpureo-marginato, spadice 2-pollicari, inflor. masc. $\frac{3}{4}$ poll. longa alba, fem. $\frac{1}{3}$ poll. laxiflora, staminodiis paucis rubris, appendice fusiformi ochraceo sinuato-ruguloso, ovariis ellipsoideis, stylis elongatis, stigmatibus dilatatis integris v. 2–3-lobulatis.

Alocasia reversa, *N. E. Br. in Gard. Chron.* 1890, vol. ii. p. 38.

A. reversa is closely allied to *A. sinuata*, N. E. Br. (in *Gard. Chron.* (1883) ii. 678), also a native of the Philippine Islands, which differs in its very much larger size, and in the sinuate margins of the obtuse differently coloured leaves with more numerous nerves; in both species the tendency of the sheaths to bear foliaceous tips is very manifest, though more so in *A. sinuata*. Mr. Brown remarks that the darker shade of colour along the midrib and nerves of the leaf of *A. reversa* is the reverse of what is usual in the genus. In the specimens which he described the leaves are cleft to the insertion of the petiole, in those here figured the basal lobes are connate almost throughout their length.

A. reversa was imported from the Philippine Islands by Messrs. Sander of St. Albans, from whom the specimen here figured was obtained. It flowered in October, 1895, in a stove of the Royal Gardens, Kew.

Descr.—*Stem* very short or 0. *Leaves* five to eight inches long by three to four broad, deflexed from the petiole, oblong or ovate-oblong, acute or cuspidate, base cordate, with a narrow sinus which sometimes extends

to the insertion of the petiole, grey-green above, passing into dark green in broad undefined bands along the midrib and nerves, under surface uniformly very pale green, margins narrowly bordered with yellow, basal lobes parallel obtuse; nerves four arching pairs, and a pair reversed and running through the basal lobes nearly parallel to their inner margins, each giving off two branches; petiole six inches long, terete, pale green, as thick as a goose-quill. *Sheaths* at the base of the petiole elongate, membranous, very pale, sometimes tipped with green or subfoliaceous. *Scape* three to five inches long, pale green. *Spathe* two to two and a half inches long, white, membranous, with narrow purple margins; tube ovoid, half as long as the oblong acute revolute limb. *Spadix* two inches long, lower one-third female, with rather distant green ovaries; median portion male, three-fourths of an inch long, white, separated from the female by a short naked space; appendix cylindric, rugulose, ochreous. *Male fl.* of many narrow anther-cells together forming a cylindric truncate column. *Ovaries* ellipsoid, style rather long, stigma dilated obliquely 2–3 lobed; ovules 4–7, basal. —*J. D. H.*

Fig. 1, Spadix; 2, male flowers; 3, a female flower; 4, the same bisected vertically; 5, ovule:—***All enlarged.***

M.S. del, J.N. Fitch lith

L. Reeve & Cº London

LATHYRUS UNDULATUS.

Native of the shores of the Dardanelles.

Nat. Ord. Leguminosæ.—Tribe Viciæ.

Genus Lathyrus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 526.)

Lathyrus (Eulathyrus) *undulatus*; perennis, glaberrimus, caulibus anguste alatis, stipulis semisagittatis 2-partitis segmento antico subulato-lanceolato deflexo incurvo, postico parvo subulato erecto, petiolo angustissime alato in stipitem gracilem apice cirrhiferam producto, foliolis unijugis ovatis mucronatis 5–9-nerviis marginibus undulatis, subtus glaucis nervis prominentibus, flexuosis anastomosantibus, pedunculis folia superantibus strictis 5–7-floris, calycis lobis tubo subæquilongis lanceolatis recurvis, corolla purpureo-violacea, ovario pubescente, legumine longe lineari apice incurvo attenuato rostrato sutura superiore carinata, seminibus oblongis rugulosis.

L. undulatus, *Boiss. Diagn. Pl. Or. Ser. II.* pars. ii. p. 41; *Fl. Orient.* vol. ii. p. 611.

L. latifolius, *Sibth. & Sm. Prodr. Fl. Graec.* vol. ii. p. 69 (*non Linn.*).

L. Sibthorpii, *Baker* (*ex Hort.*) *in Gard. Chron.* (1890) vol. i. p. 704.

Lathyrus undulatus is a critical species, being very closely allied to the oriental *L. rotundifolius*, Willd., and to the Western European *L. latifolius*, Linn., with which latter Sibthorp confounded it. Of these *L. rotundifolius* (Tab. 6522) is easily distinguished by its much larger size and stouter habit, broader leaflets, much larger broader stipules, numerous crowded smaller flowers of a dull rose colour, and short calyx-lobes. *L. latifolius* (regarded by some botanists as a variety of *L. sylvestris*, L.) has lanceolate leaflets, and numerous much larger violet-purple flowers with a green keel.

L. undulatus has been long known in cultivation under the garden name of *L. Sibthorpii* (which Mr. Baker has adopted), and which seems to indicate that it was introduced by Sibthorp, who certainly was its discoverer, into the Oxford Botanic Gardens. According to Mr. Hinds of Newton Abbot, whose observations are given by Mr. Baker in the *Gardener's Chronicle*, it flowers from a fort-

night to three weeks before *L. rotundifolius*, and is a much smaller plant, does not grow above three feet high, and can nearly or quite support itself without a stick. Its geographical area is very restricted, being confined to the neighbourhood of Constantinople, and the opposite coast of Bithynia, where it grows amongst bushes. According to Boissier *L. rotundifolius* is also a native of Byzantium, and extends thence to mid-Russia, Armenia and Persia; but Mr. Baker considers this an error, and that *L. rotundifolius* will prove to be restricted to the Caucasus and Crimea.

Plants of *L. undulatus* were received at the Royal Gardens, Kew, from those of Glasnevin in 1895, and from one of these the accompanying drawing was made in May, 1896.

Descr.—Quite glabrous. *Stem* two to three feet high, slender, scandent, narrowly winged. *Stipules* semisagittate, one-half to two-thirds of an inch long, bipartite, with a rounded sinus; segments divaricate, upper short, subulate, erect, lower much longer, subulate-lanceolate, erect or deflexed. *Leaves* with two opposite leaflets, a rather stout compressed petiole, about an inch long, terminated by a very slender rigid stipes, which bears a trifid terminal cirrhus; leaflets two to three inches long, sessile, elliptic or ovate, acute or mucronate, 5–7-nerved, dark green above, pale beneath, margins undulate, nerves very slender and anastomosing above, prominent as is the midrib beneath. *Peduncle* much longer than the leaves, erect, slender, loosely five- to seven-flowered. *Flowers* about half an inch broad, bright rose-purple, fading to violet, inodorous. *Calyx-tube* campanulate, lobes lanceolate, or deltoidly lanceolate. *Standard* orbicular, not callous at the base. *Wing-petals* oblong, tips and basal auricle rounded. *Keel-petals* semicircular, hardly auricled. *Ovary* pubescent, style short, stigma trulliform. *Pod* two to three inches long, linear, flat, glabrous, gradually narrowed from the middle to the base, tip incurved, upper suture keeled. *Seeds* oblong, rugulose.—*J. D. H.*

Fig. 1, Calyx and stamens; 2, wing-petal; 3, keel-petal; 4, ovary:—*All enlarged.*

M. S. del. J. N. Fitch lith

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Tab. 7500.

FRITILLARIA NOBILIS.

Native of Armenia.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Fritillaria, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 817.)

Fritillaria (Monocodon) *nobilis* bulbo globoso, tunicis paucis parvis ovatis, caule unifloro brevissimo, nodis foliiferis sæpissime 2, foliis erectis inferioribus oppositis lanceolatis superioribus 3 linearibus, perianthio magno campanulato cernuo breviter pedunculato, segmentis oblongis extus concoloribus glaucescentibus rubro-brunneis intus flavo-viridibus maculis copiosis rubro-brunneis præditis supra basin foveolatis, foveolâ parva oblonga, staminibus perianthio duplo brevioribus filamentis glabris antheris lineari-oblongis, ovario oblongo-cylindrico, stylo ovario longiore apice tricuspidato, fructu oblongo ad basin attenuato.

This pretty little *Fritillaria* is remarkable for its dwarf habit and large dark claret-coloured flowers copiously spotted on the inside. It was discovered by Sintenis in 1890 in the pine-woods of Koessedagh in Turkish Armenia, and was imported in plenty in a living state and distributed by Herr Max Leichtlin, from whom the bulbs from which the plants here drawn, which were raised in the Royal Gardens, Kew, in the spring of 1896, were received. It has been regarded as a variety both of the Caucasian *F. latifolia*, Willd., and the Persian *F. Kotschyana*, Herb., but in my opinion is quite distinct from both of them.

Descr.—*Bulb* small, globose, with few small ovate, white, fleshy tunics. *Stem* terete, erect, one-flowered, not reaching a height of more than three or four inches above the soil, with two leaf-bearing nodes. *Leaves* erect; lower opposite, lanceolate, about two inches long; upper usually three in a whorl, linear. *Flower* drooping, shortly peduncled. *Perianth* broadly campanulate, an inch and a half long; segments oblong, obtuse, dark plain claret-brown, with a glaucous tinge outside, inside copiously spotted with the same colour on a ground of greenish-yellow. *Stamens* half as long as the perianth; filaments

flattened; anthers linear-oblong. *Ovary* oblong-cylindrical; style longer than the ovary, with three short ovate cusps. *Capsule* oblong, an inch and a half long, narrowed to the base.—*J. G. Baker.*

Fig. 1, Base of a segment of the perianth, with stamen; 2, front view of stamen; 3, back view of stamen; 4, pistil:—*All enlarged.*

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Tab. 7501.

PARROTIA Jacquemontiana.

Native of the Western Himalaya.

Nat. Ord. Hamamelideæ.

Genus Parrotia, *C. A. Mey.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 666.)

Parrotia *Jacquemontiana*; foliis breviter petiolatis orbicularibus v. subquadratis crenato-denticulatis stellato-tomentellis, stipulis oblongis, bracteis involucrantibus 4–6 amplis orbicularibus obovatisve albis dorso marginibusque squamulis furfuraceis purpureis conspersis, calycis dentibus parvis, tubo ovarioque villosis, staminibus numerosis, filamentis linearibus, antheris brevibus oblongis obtusis connectivo vix producto.

P. Jacquemontiana, *Decne. in Jacquem. Voy. Bot.* p. 73, t. 82. *Hook. f. & Thoms. in Journ. Linn. Soc.* vol. ii. (1858) p. 85. *Brandis For. Fl. N.W. & Centr. Ind.* p. 216, t. 28. *Clarke in Hook. f. Fl. Brit. Ind.* vol. ii. p. 426. *Aitchis. in Journ. Linn. Soc.* vol. xviii. (1880) 59. *Gamble Manual of Indian Timbers*, p. 174. *Stewart, Punjab Plants*, p. 110.

Fothergilla involucrata, *Falconer in Proc. Linn. Soc.* vol. i. (1839) p. 18; *et in Royle Ill. Bot. Himal. Introd.* p. xxv.

Though placed in the same genus as *Parrotia persica*, C. A. Mey. (see t. 5744) *P. Jacquemontiana* differs in very marked characters from that plant, in which there is a total absence of stellate hairs, the leaves in late autumn turn to brilliant orange-yellow golden and scarlet colours, the calyx-lobes are oblong, the involucrant bracts small and dark brown externally, the stamens very few, with almost capillary filaments, and the anthers narrow, scarlet, and mucronate. *P. Jacquemontiana* is indeed much nearer the N. American *Fothergilla alnifolia* (Tabs. 1341, 1342) in foliage, stellate hairs, and the numerous stamens with short anthers. There is in fact nothing to distinguish *P. Jacquemontiana* generically from *Fothergilla*, but the capitate involucrate inflorescence, in contrast with the spicate ex-involucrate inflorescence of the latter.

The geographical range of *Parrotia Jacquemontiana* is almost limited to the outer Himalayan ranges between the sources of the Ravi in Chamba, and the Indus, where it extends often gregariously from Murree to Gilgit and Hazara. It was discovered in about 1836 in Kashmir by Dr. Falconer, that being the central area of its distribution. Its range in elevation is from 2800–8500 ft. It occurs

sparingly in N.E. Afghanistan, as in the Kuram Valley, where Dr. Aitchison describes its use in making a wicker-work which, plastered with clay, is the building material of the inhabitants. According to Gamble its wood, which is pinkish-red, hard, heavy, and very close-grained, is highly esteemed for walking-sticks, tent-pegs, native bowls, &c.; and the flexible twigs are twisted into thick ropes often 300 ft. long, used in the construction of bridges.

The Royal Gardens are indebted to Mr. Robert Ellis of the Forest Department, Panjab, for seeds of this interesting plant, received in 1879. The plants raised from these have attained eight feet in height, three feet six inches in diameter, and are of a pyramidal form. They flowered in the Arboretum in March of the present year. Plants of it have also been received from our indefatigable correspondent, Mr. Max Leichtlin. As implied above, the leaves present no bright colours preceding their fall in autumn.

Descr.—A shrub or small Hazel-like tree, attaining fifteen to twenty feet in height, with spreading, flexuous branches. *Leaves* up to four inches long and broad, very shortly petioled, orbicular, subquadrate, or very broadly obovate, tomentose on both surfaces with stellate hairs; margin crenately toothed, sometimes obscurely lobed; stipules oblong, pubescent. *Flowers* about twenty, in dense globose sessile heads, one-half to three-quarters of an inch in diameter, surrounded by four to six orbicular or obovate white unequal bracts, the largest half an inch diameter, which are sprinkled on the back and margins with a red-purple scurf; stipules oblong, obtuse, pubescent. *Flowers* densely crowded, sessile, appearing as a head of golden stamens. *Calyx* a very small toothed pubescent cup embracing the pubescent ovary; teeth small, subulate. *Petals* 0. *Stamens* about fifteen, filaments a quarter of an inch long, linear, erect; anthers shortly oblong; connective produced into an obtuse top. *Ovary* 2-celled, with two filiform sessile stigmas. *Fruit* a crustaceous 2-beaked nut, dehiscing between the beaks. *Seeds* oblong, smooth, polished.—*J. D. H.*

Fig. 1, Stellate hairs; 2, flowers; 3, calyx and ovary; 4 and 5, anthers; 6, section of ovary: *all enlarged*; 7, head of fruits, and 8, seed, both *of the nat. size.*

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CONTENTS OF No. 622, OCTOBER, 1896.

TAB. 7497.—ACTINIDIA POLYGAMA.
" 7498.—ALOCASIA REVERSA.
" 7499.—LATHYRUS UNDULATUS.
" 7500.—FRITILLARIA NOBILIS.
" 7501.—PARROTIA JACQUEMONTIANA.

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Tab. 7502.

CYCNOCHES Haagii.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Cycnoches, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 552.)

Cycnoches *Haagii*; caule crasso folioso compresso, foliis subdistichis 6–8-pollicaribus lanceolatis acuminatis basi angustatis laete viridibus, subtus pallidioribus carinatis nervis 5–7, vaginis caulinis brevibus lævibus, racemo axillari breviter pedunculato suberecto 6–7-floro, pedunculo basi vaginis brevibus obtusis membranaceis instructo, rachi pedicellisque teretibus pallide viridibus, bracteis lanceolatis membranaceis brunneis pedicellis brevioribus, floribus 2–2½ poll. latis, sepalis oblongo-ovatis obtusiusculis concavis petalisque patulis intus sordide flavo-viridibus extus lividis, petalis ovatis subacutis, labello carnoso rotundato subacuto convexiusculo albo maculis paucis rufis asperso basi cordato saccato, disco ad orem sacci tuberculis 2 conniventibus instructo, columna viridi infra medium punctulata, anthera parva.

C. Haagii, *Rodrig. Gen. & Sp. Orchid. Nov.* vol. ii. (1881) p. 221, *Ic. ined.* t. 687.

The genus *Cycnoches*, a near ally of *Catasetum*, now contains ten or eleven described species, of which four have been figured in this magazine (tabs. 3855, 4054, 4215, 4479). They differ greatly from one another in the size and colour of the flower, and especially in the form of the lip, but agree in the singular slender arched column, and in the structure of the pollinia. All are tropical American.

C. Haagii, which is remarkable for the lurid green of its sepals and petals, is a native of the delta of the Amazons, and was first described in 1881 by J. Barbosa Rodrigues, from specimens procured from the River Andira, a tributary of the Amazons in lat. 3° 30′ S. and long. 57° 38′ West. The drawing here given is of a fine plant received in May, 1891, from E. S. Rand, Esq., of Para, to whom the Royal Gardens are indebted for other interesting allied Orchids, notably *Catasetum Randii* (Tab. 7470) and *C. Lemosii* (Tab. 7444). It flowered in a tropical house for the first time in October, 1892, and again in the same month of 1895.

November 1st, 1896.

Descr.—*Stem* about six inches high and one in breadth, slightly compressed, leafy, clothed at the base with old brown leaf-sheaths. *Leaves* subdistichous, lower three to four inches long, sessile, oblong-lanceolate; upper six to eight inches long, recurved, lanceolate, acuminate, bright green above, paler beneath, with five to seven strong ribs, base narrowed into the short smooth green sheath. *Peduncle* short, erect or suberect, clothed with brown membranous obtuse sheaths. *Racemes* five- to seven-flowered, inclined; rachis and pedicels pale green; bracts half as long as the pedicels, which are about an inch long, narrowly lanceolate, membranous. *Flowers* two to two and a half inches broad across the petals. *Sepals* oblong-ovate, obtuse, lividly yellow green, dorsally brown-green; dorsal erect; lateral deflexed, concave. *Petals* as long as the sepals and of the same colour, ovate, subacute, spreading. *Lip* coriaceous, rather shorter than the sepals, orbicular-ovate, subacute, white, or suffused with pale rose, sparsely spotted with red-brown; base cordate, saccate, disk with two obtuse conniving smooth low conical tubercles at the mouth, separated from one another by a narrow sinus leading into the sac. *Column* long, slender, arched in a semicircle, green, speckled with red-purple in the lower half. *Anther* small, depressed; pollinia oblong, terminating a long, linear caudicle which is dilated below the middle; gland large.—*J. D. H.*

Fig. 1, Flower with petals and sepals removed; 2, top of column and anthers; 3 and 4, pollinia :—*All enlarged.*

M.S del, J.N.Fitch lith.

Vincent Brooks, Day & Son

L. Reeve & Co. London

Tab. 7503.

RHODODENDRON SERPYLLIFOLIUM.

Native of Japan.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron (Tsusia) *serpyllifolium*; fruticulus humilis, erectus, microphyllus, caule robusto, ramis ramulisque rigidis strigoso-setosis, foliis ¼–⅓ poll. longis ramulis brevissimis confertis et quasi verticillatis obovatis obtusis setulosis eglandulosis et elepidotis, gemmis floriferis terminalibus aphyllis 1-floris, bracteis oblongis scariosis fulvis, floribus breviter pedicellatis, pedicellis paleis lanceolatis hyalinis argenteis opertis, calyce patellæformi 5-lobo, lobis rotundatis ciliatis, corolla infundibulari-rotata intus glaberrima, lobis ovato-oblongis obtusis, staminibus 5, filamentis exsertis infra medium glanduloso-puberulis, antheris parvis, ovario oblongo paleis lanceolatis linearibusve integris v. fissis argenteo-hyalinis vestitis 5-loculare.

R. serpyllifolium, *Miq. in Ann. Mus. Bot. Lugd. Bat.* vol. ii. p. 165 (*Prolus Fl. Japon.* p. 97). *Maximov. Rhod. As. Or.* p. 42, t. 4, fig. 18–25 (*ex Mem. Acad. Sc. Petersb. Ser.* 7, vol. xvi. (1870) No. 9). *Franch. & Sav. Enum. Pl. Japon.* vol. ii. p. 292.

Azalea? serpyllifolia, *A. Gray in Perry Exped. Japan*, vol. ii. p. 315; *in Mem. Amer. Acad. Arts & Sc. N.S.* vol. vi. I. (1857) p. 399. *Mast. in Gard. Chron.* (1882) vol. i. p. 429.

With the exception of the little high-alpine *Rhododendron nivale* of Sikkim, *R. serpyllifolium* is perhaps the most inconspicuous species of the genus. Specifically it is closely allied to *R. indicum*, and especially to the var. *amœnum* (*Azalea amœna*, tab. 4728), which is a much larger species, and has the youngest leaves clothed with silvery hyaline setæ like those on the pedicel and ovary of *R. serpyllifolium*. Indeed I should not be surprised if the latter proved to be a very dwarf form of *R. indicum*. The specimens described by A. Gray were from a plant cultivated at Simoda, which is the sole habitat given for it by Maximovicz, who describes the flower as pale lilac. Moseley, during the *Challenger* Expedition, collected it in 1875 at Kobe (near Hiogo, on the Inland sea).

The figure in the *Gardener's Chronicle* is from a plant cultivated in Veitch's establishment, and is described as

having the flowers appearing in terminal tufts, white, and the filaments glabrous. I do not find the silvery paleæ of the pedicels and ovary to be described by any author, those of the former are one-sixteenth of an inch long, twice as long as those of the pedicels; they are modifications of the silvery hairs of *R. indicum*.

Plants of *R. serpyllifolium* were purchased for the Royal Gardens from the Yokohama Nursery Company in 1895, and are now about a foot high; they flower in April, and though possibly hardy, succeed best when grown in pots, and kept in a close frame.

Descr.—A very stout, scrubby, much irregularly branched, rigid shrub, of low stature; bark dark brown; branchlets strigose with rigid appressed subulate bristles. *Leaves* deciduous, crowded, sessile, and as if whorled on very short lateral branchlets, rarely more than a third of an inch long, obovate, ciliate on the margins and surfaces, neither glandular nor lepidote, bright green above, pale beneath. *Flowers* solitary, subsessile, from special (leafless) buds at the ends of the leafy branchlets, surrounded by brown, ovate-oblong, obtuse, yellow, scarious bracts; pedicels very short, clothed with silvery, scurfy lanceolate scales. *Calyx* a small patelliform disk, with five broadly rounded ciliate lobes. *Corolla* about an inch broad, bright rose-red; tube very short, funnel-shaped, quite glabrous without and within; lobes five, oblong-ovate, obtuse, spreading. *Stamens* 5, filaments longer than the corolla-lobes, slender, glandular below the middle; anthers small, shortly oblong, brown. *Ovary* oblong, five-celled, clothed like the pedicels with linear silvery hyaline scales; style slender, glabrous; stigma small, capitellate.—*J. D. H.*

Fig. 1, Portion of branchlet; 2, leaves bracts and ovary; 3, pedicel and ovary; 4, hyaline scales of ovary; 5, stamen:—*All enlarged.*

M.S. del. J.N. Fitch lith.

Tab. 7504.

PENTSTEMON azureus.

Native of California.

Nat. Ord. Scrophularineæ.—Tribe Cheloneæ.

Genus Pentstemon, *Mitch.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 940.)

Pentstemon (Saccanthera) *azureus*; perennis, basi frutescens, glaberrimus, glaucescens, foliis lineari-lanceolatis oblanceolatisve obtusis integerrimis v. hic illis serratis radicalibus subspathulatis, racemis gracilibus secundifloris, bracteis parvis lanceolatis, pedunculis 1-floris supra medium bibracteolatis, pedicellis brevissimis, calycis parvi lobis lineari-lanceolatis recurvis, corollæ pollicaris violaceæ tubo calyce duplo longiore ad $\frac{1}{3}$ poll. longo in faucem infundibulari-campanulatam semipollicarem sensim dilatato, limbo patente majusculo, labii superioris lobis rotundatis recurvis, inferioris latioris 3-lobi lobis brevissimis rotundatis æquilongis, disco roseo-purpureo, antheris ovato-cordatis loculis post anthesin subdivergentibus recurvis basi saccatis marginibus rimarum pubescentibus, staminodio gracili apice clavato glaberrimo, ovario glaberrimo, stylo gracili.

P. azureus, *Benth. Pl. Hartweg.* p. 327; *in Journ. Hort. Soc. Lond.* vol. v. (1850) p. 144. *Paxt. Fl. Gard.* vol. ii. p. 138, t. 64. *Lemaire Jard. Fleur.* t. 211. *Moore & Ayres Mag. Bot.* (1850) t. 209. *A. Gray in Proc. Amer. Acad.* vol. vi. (1862) p. 75; *Bot. Calif.* vol. ii. p. 561; *Synopt. Flor. N. Am.* vol. ii. pars. I. p. 272.

A common and very variable plant throughout the state of California, ascending in a dwarf form to 8000 ft. above the sea. A. Gray, in his Synoptical Flora of the United States, describes five varieties, with none of which does that figured here exactly accord, agreeing best with var. *ambiguus* (*P. heterophyllus*, Wats., not of Lindley, figured at tab. 1899) in stature, habit and upper leaves narrowed to the base, but having a much longer corolla. Another variety is *Jaffrayanus* (*P. Jaffrayanus* of this work, tab. 5045), which, with the shorter corolla of var. *ambiguus*, has a stouter habit, much broader lower leaves, and the upper leaves broad at the base. *P. azureus* belongs to a comparatively small section of the genus (which contains twelve species) distinguished by the structure of the anthers, the lobes of which are confluent above, and instead of diverging remain nearly parallel, dehiscing in their upper halves and across the top, whilst their lower

halves remain closed, and assume a saccate form. In reference to this character I find that the neglect of it in the drawing of *P. speciosus*, Dougl. (*P. glaber*, Pursh) in the *Botanical Register*, renders it impossible to distinguish that figure from *P. azureus*. The anthers of *P. speciosus* have divaricated cells, as may be seen in Douglas's type specimens at Kew, whilst those represented in the *Register* are of exactly the same form as in *azureus*.

Pentstemon azureus was raised from seeds sent to the Royal Gardens in 1895 by Professor Goodale, Director of the Botanic Garden of Harvard University, Massachusetts. Plants raised from these flowered in June of the present year in the open air. The stems, which become hard and woody, were protected in a cold frame in winter.

Descr.—More or less glaucous. *Stem* two to three feet high, woody and branching from the base; branches erect, slender, green and red-brown. *Lower* leaves three to five inches long, narrowly oblanceolate, acute, quite entire, or rarely with one or two lateral incisions, yellow-green; upper leaves gradually smaller, about an inch long, linear, narrowed to the base. *Flowers* secund, in slender terminal and lateral racemes, which are sometimes branched at the base, bracteate and bibracteolate; pedicels slender; bracts and bracteoles ovate-lanceolate, one-sixth to one-third of an inch long. *Calyx* small, lobes ovate, with recurved tips. *Corolla* an inch and a half long, bright azure or violet blue, rose-purplish towards the base of the tube, and on the disks of the lower corolla-lobes; tube terete, about a third of an inch long, gradually dilated into the tubular-campanulate elongate throat; limb broadly two-lipped, three-quarters of an inch broad across the tips; upper lip of two broad retuse recurved lobes; lower broadly transversely oblong, shortly truncately three-lobed, the lobes retuse. *Stamens* included, filaments quite glabrous; anthers golden yellow, margins of cells shortly villous. *Staminodes* filiform, tip clavate, quite glabrous. *Ovary* and *style* glabrous.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, base of corolla laid open with stamens; 3 and 4, anthers; 5, ovary:—*All enlarged.*

Brooks

Tab. 7505.

HAWORTHIA xiphiophylla.

Native of Cape Colony.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Haworthia, *Duval*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 777.)

Haworthia *xiphiophylla*; acaulis, foliis 40–50 dense rosulatis lanceolatis pallide viridibus facie planis dorso distincte carinatis e basi ad aristam terminalem pellucidam sensim attenuatis, aculeis marginalibus magnis pellucidis, carinâ dorsali aculeis consimilibus prædita, pedunculo semipedali bracteis vacuis paucis ovatis pallidis prædito, racemo laxo 10–12-floro, pedicellis brevibus ascendentibus, bracteis ovatis parvis, perianthii albi tubo oblongo-cylindrico lobis lineari-oblongis tubo brevioribus 3 inferioribus quam superioribus magis recurvatis, genitalibus tubo inclusis, antheris subglobosis parvis, ovario oblongo, stylo brevissimo, stigmate capitato.

This pretty little new *Haworthia* belongs to the small section *Arachnoidea*. Of the old well-known species of the same section it differs from *H. setata*, Haw., by its narrower, thinner leaves, and from *H. arachnoidea*, Haw. (*Aloe arachnoidea*, Haw. (*Bot. Mag.* tab. 756) by the leaves not being at all pellucid or lineate. Like the other species of the genus it requires protection in winter. It was sent to the Royal Gardens, Kew, from the neighbourhood of Uitenhage, by Mr. C. Howlett, late a member of the garden staff at Kew, and now foreman in the nursery of Messrs. Smith Brothers, of Uitenhage. It flowered for the first time in April, 1896.

Descr.—*Leaves* forty or fifty in a dense sessile rosette, lanceolate, two inches long, one-third of an inch broad low down, tapering gradually to a large pellucid terminal awn, fleshy, pale green, not at all pellucid or lineate on either surface, flat on the face, acutely keeled on the back, margined with large pellucid prickles, which extend to the upper part of the keel. *Peduncle* terete, half a foot long, furnished with a few small scariose ovate empty bracts. *Perianth* white, three-quarters of an inch long; tube oblong-cylindrical; lobes linear-oblong, rather shorter than the tube, the three lower more reflexed than the three

upper. *Stamens* included in the perianth-tube; anthers small, subglobose. *Ovary* oblong; style very short; stigma capitate.—*J. G. Baker.*

Fig. 1, A leaf; 2, a flower, complete; 3, portion of the perianth, with stamen; 4, pistil:—*All enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son imp.

Tab. 7506.

ACANTHOLIMON venustum.

Native of Asia Minor.

Nat. Ord. Plumbagineæ.—Tribe Staticeæ.

Genus Acantholimon, *Boiss.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 625.)

Acantholimon (Rhodocalycina) *venustum*; laxe cæspitosum, fere glaberrimum, foliis rosulatis planiusculis et carinatis v. anguste linearibus v. acerosis exigue calcareo-squamulatis marginibus scaberulis, scapis remote vaginatis foliis multo longioribus, spica simplici erecta subrecurva laxiflora, floribus secundis 3-bracteatis, bracteis glabris v. pubescentibus acuminatis exteriore triangulari ovata v. ovato-lanceolata membranaceo-marginata, interioribus lanceolatis latius marginatis quam exteriore $\frac{1}{3}$–$\frac{1}{2}$ longioribus, calycis tubo pilosulo limbo infundibulari fusco eroso paullo longiore, petalis **roseis purpureisve.**

A. venustum, *Boiss. Diagn. Ser. I.* vol. vii p. 80; *Fl. Orient.* vol. iv. p. 831; *in DC. Prodr.* vol. xiii. p. 631. *Tchihatch. Voy. As. Min.* pars. III. vol. ii. p. 408, t. 37.

A. laxiflorum, *Boiss. in Bourgeau, Pl. Exsicc.* No. 295.

Statice Olivieri, *Jaub. & Spach. Ill. Pl. Orient.* vol. i. p. 168, t. 93. *Verlot in Rev. Hortic.* (1866) p. 451 *cum Ic. pict.*

S. venusta, *Fenzl. mss.*

S. dianthifolia, *Jaub. & Spach. l. c.* vol. i. p. 162 (*excl. syn.*).

Limonium orientale, &c., *Tourn. Coroll. Instit. Rei Herb.* p. 25.

Though numbering nearly one hundred described species, the genus *Acantholimon* has only a couple of representatives known to be under cultivation in English gardens, namely, *A. glumaceum*, Boiss., and the plant here figured; and none are figured in any British work devoted to horticultural illustrations. The genus is peculiar as being separated from *Statice* by habit alone, which renders it all the more remarkable that it should have a very wide yet exceedingly well defined geographical distribution, abounding from Western Asia Minor through Persia to Affghanistan, Turkestan, and the Altai Mountains. Only one species enters Europe, *A. androsaceum*, Boiss., which extends westward from Cappadocia to Crete and the mountains of Greece; and one alone crosses the Indus, the *A. lycopodioides*, Hook. f., found in Northern Kashmir. Many of

the species, including *A. venustum*, have, in the dry limestone hills which they inhabit, the leaves and stems coated with an incrustation of calcareous matter.

A. venustum is, according to Boissier, a native of mountain ranges of Cilicia, Cappadocia, Catalonia, Anatolia, and Armenia, at elevations of 4000 to 7000 ft. That author describes three forms of it which pass into one another; *venustum proper*, with rather broad plano-carinate leaves; *β. Olivieri*, to which the plant here figured is referable, with longer narrower leaves; it extends from Lycia to Western Persia; and *γ. assyriacum*, with a velvety pubescent rachis of the spike and bracts, which has been found in Assyria only. The flowers vary from rose to purple. The specimen here figured is from a plant in the Rock garden at Kew, where it has long been cultivated, forming a dense tuft a foot across, and flowering in summer. It was introduced into Europe, probably by Bourgeau, the French botanical traveller.

Descr.—*Stems* densely tufted, forming moss-like green patches. *Leaves* very variable, spreading, an inch long or upwards, acicular in the form here represented, bright green, rigid, almost pungent, dorsally rounded, ventrally concave, margins minutely scaberulous. *Flowering* stems three to four inches long, erect or slightly recurved, slender, rigid, green; sheaths distant, lanceolate, acuminate, erect, green, margins narrowly hyaline. *Spike* secund, subrecurved, two to three inches long, many-fld.; bracts three, about one-third of an inch long, like the stem-sheaths, but with broader hyaline margins, outer triangular about a third to a half shorter than the inner. *Flowers* one half to three-fourths of an inch broad. *Calyx* infundibular, scarious, yellow brown, five-lobed; tube sparsely hairy in the nerves, lobes broadly ovate, acute, erose. *Petals* spathulately oblanceolate, one-nerved, rose-coloured.—*J. D. H.*

Fig. 1, Portion of leaf; 2, calyx; 3, petal and stamen; 4 and 5, anthers; 6, pistil:—*All enlarged.*

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CONTENTS OF No. 623, NOVEMBER, 1896.

TAB. 7502.—CYCNOCHES HAAGII.
„ 7503.—RHODODENDRON SERPYLLIFOLIUM.
„ 7504.—PENTSTEMON AZUREUS.
„ 7505.—HAWORTHIA XIPHIOPHYLLA.
„ 7506.—ACANTHOLIMON VENUSTUM.

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Tab. 7507.

GRAMMATOPHYLLUM Rumphianum.

Native of the Moluccas and Borneo.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Grammatophyllum, *Blume*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 539.)

Grammatophyllum *Rumphianum*; pseudobulbis magnis ovoideo-fusiformibus, foliis pedalibus oblongo-oblanceolatis, pedunculo cum racemo 3–4-pedali, racemo pendulo v. nutante laxe multifloro, rachi viride punctato, bracteis parvis ovato-lanceolatis, pedicellis cum ovario brevi 2½-pollicaribus, floribus 3 poll. diam., sepalis petalisque consimilibus obovato-oblongis obtusis undulatis luteo-viridibus plagis magnis rufo-brunneis ornatis, sepalo postico arrecto, labelli parvi intus pilosi lobis lateralibus rotundatis incurvis, terminali rotundato, disco aureo lineis 5 purpureis hirsutis percurso, columna incurva basi foveolata, anthera pubescente ambitu lobulata.

G. Rumphianum, *Miquel Ann. Mus. Bot. Lugd. Bat.* vol. iv. p. 219, t. 8, 9. *Rolfe in Orchid Rev.* vol. iii. (1895) p. 208.

G. Gulielmi II., *Krænzlin in Gartenfl.* vol. xliii. (1894) p. 114.

G. scriptum, *Teysm. & Binnend. in Natuurk. Tijdsch. v. Nederl. Ind.* vol. xxvii. p. 21, *excl. Syn. Blumei.*

G. Seegerianum, *Hort.*

Though greatly inferior in the dimensions of all its parts to the type of the genus *G. speciosum* (Tab. 5157), *G. Rumphianum* must still, taking into account the size of the pseudobulbs, rank amongst the most massive of orchids. Its nearest, and indeed very near ally, is *G. Fenzlianum*, Reichb. f. (*Xen. Orchid.* vol. ii. t. 16), which differs in the smaller size of the flowers, with fewer smaller spots, and which, being a native of Amboyna, should perhaps rather than this, have borne the name of the author of the "Hortus Amboinensis." *G. Measuresianum* is, I think, a garden name for *G. Fenzlianum* rather than of *Rumphianum*.

Two plants of *G. Rumphianum* flowered simultaneously at Kew in June, 1895, of which one was received from the Botanic Gardens of Hongkong, with the information that it came from Kudah in Borneo. The other was obtained from Messrs. Hugh Low & Co., under the name of *G. Gulielmi II.*, Krænzlin. The flowers remain fresh for

at least two months. The two lowest of the racemes have regular sepals and petals, and a perfect column, but no lip. The species is said to be also a native of the Philippine Islands.

Descr.—*Pseudobulbs* six to eight inches long, terete, stout, ovoid or fusiform, compressed, dark green. *Leaves* twelve to eighteen inches long, oblanceolate-oblong, obtuse, midrib beneath very stout, nerves slender. *Raceme* with the peduncle three to four feet long, spreading and nodding, or pendulous, shortly peduncled, laxly very many-flowered; rachis as thick as a goose-quill, terete, green, speckled with darker green; bracts small, about half an inch long, ovate-lanceolate, white, at length pale brown; pedicel white, with the short ovary two and a half inches long, as thick as a crow-quill. *Perianth* three inches broad. *Sepals* and *petals* similar, obovate-oblong, spreading, undulate, tip rounded, yellow green, covered with very large red-brown blotches of irregular outline. *Lip* very much smaller than the sepals, three-lobed; disk undulate, yellow with five purple nerves, more or less hairy all over; side lobes broad, rounded, incurved; terminal lobe oblong. *Column* incurved, with a deep pit in front of the base, and a lobed callus below it on each side. *Anther* orbicular, sides lobulate, pubescent. *Pollen* subglobose; strap very short; gland large, cordate.—*J. D. H.*

Fig. 1, Portion of lip; 2, column; 3, anther; 4 and 5, pollinia:—*All enlarged.*

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Tab. 7508.

PRUNUS subhirtella.

Native of Japan.

Nat. Ord. Rosaceæ.—Tribe Pruneæ.

Genus Prunus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 600.)

Prunus (Cerasus) *subhirtella*; arbuscula, cortice pallide brunnea, ramis patulis, squamis gemmarum brevibus coriaceis obtusis, foliis ovatis acuminatis caudato-acuminatisve argute duplicato glanduloso-serratis viridibus glabris basi cuneatis v. rotundatis nudis v. 1–2-glandulosis subtus secus nervos utrinque 12–14 pilosulis, petiolo brevi hirsuto, stipulis lanceolatis v. subulatis inciso-serratis, floribus præcocibus 3–5-nis $\frac{2}{3}$-$\frac{3}{4}$ poll. latis, squamis gemmarum intimis herbaceis cuneiformibus 3-lobis glanduloso-ciliatis, pedicellis calyce paullo longioribus pilosulis, calycis tubo glaberrimo v. parce piloso basi tumido lobis ovatis subserratis ciliolatis longiore, petalis albis inæqualiter crenatis v. lobulatis, staminibus 2-seriatis, ovario styloque glaberrimis, fructu immaturo ellipsoideo-globoso.

P. subhirtella, *Miquel Ann. Mus. Bot. Lugd. Bat.* vol. ii. p. 91 (*Prol. Fl. Japon.* p. 23). *Franch. & Sav. Enum. Pl. Japon.* vol. i. p. 118.

The Eastern Asiatic and Japanese species of the tribe of *Pruneæ* require a much closer study than they have hitherto received, nor is it till very recently that materials for their full investigation have been received in European Herbaria. Forbes and Hemsley in their enumeration of Chinese, &c., plants (*Journ. Linn. Soc.* vol. xxiii. p. 218 and seq.) enumerate nine species of the tribe as Chinese, of which four are also Japanese; and Franchet and Savatier, in their enumeration of Japanese plants, give six as natives of that Archipelago. From most of those inhabiting both countries *P. subhirtella* differs in its habit of flowering before leafing; in other respects it approaches nearest to *P. japonica*, Thunb. (*Amygdalus pumila*, Sims, t. 2176).

Miquel describes a variety of *P. subhirtella* (*oblongifolia*) with oblong leaves. Of this there is an authentically named specimen in the Kew Herbarium, with leaves three inches long. He describes the calyx-tube of *P. subhirtella* as villosulous and only one-twelfth of an inch long. This

organ varies much in length, but in both the cultivated specimens and in wild ones collected by Maximowicz, it is much longer, and quite or nearly glabrous. *P. subhirtella* is, according to specimens in the Kew Herbarium, enumerated by Maximowicz as a native of the mountains of Nippon, and as cultivated at Nagasaki. Miquel gives three Japanese names for it, Iteo Sakura, Hisakura, and Sakako.

The specimen here figured is from a small plant received at the Royal Gardens in 1895 from Professor Sargent, Director of the Arnold Arboretum, Boston, U.S.A., and which flowered in the open air in April of the present year, and was in full leaf in May.

Descr.—A small tree? branches suberect. *Leaves* appearing after the flowering, two to three inches long, ovate, acuminate or caudate-acuminate, doubly glandular-serrate, dark green above, with twelve to fourteen pairs of nerves, paler beneath, base rounded or cuneate, eglandulose; petiole one-sixth to one-fourth of an inch long; stipules subulate, entire; scales of bud and leaves short, obtuse, pale yellow brown. *Flowers* in fascicles of three to five, produced before the leaves expand, white, about three-fourths of an inch broad; outer bud-scales as of the leaf-buds, inner small, herbaceous, often irregularly three-lobed, glandular-ciliate; pedicels usually rather longer than the calyx-tube, laxly hairy. *Calyx-tube* cylindric, inflated at the base, green, laxly hairy; lobes about a third shorter than the tube, ovate-oblong, subserrate, ciliolate. *Petals* more or less irregularly crenate or lobulate. *Stamens* in two series. *Ovary* and *style* glabrous.—*J. D. H.*

Fig. 1, Inner floral bud-scale; 2, flower unexpanded; 3, vertical section of calyx-tube showing stamens and ovary; 4 and 5, anthers:—*All enlarged.*

M.S del. J.N.Fitch lith.

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Tab. 7509.

CORIARIA japonica.

Native of Japan.

Nat. Ord. Coriarieæ.

Genus Coriaria, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 429.)

Coriaria *japonica*; ramis robustis acute tetragonis lenticellatis, foliis breviter petiolatis ovatis ovato-lanceolatisve acuminatis, racemis ramulis annotinis enatis monoicis sæpissime 3-nis (unico masculo) 2-3-pollicaribus, pedunculis brevibus multibracteatis, bracteis ovatis, fl. masc. parvis, sepalis ovatis acutis petalis oblongis subtriplo longioribus, filamentis elongatis capillaribus, antheris lævibus, pistillodios 0, fl. fem. subglobosis, sepalis ovato-oblongis, petalis late ovatis valde imbricatis cerasinis corallinisve apicibus rotundatis ovarium superantibus, nuculis $\frac{1}{8}$-$\frac{1}{7}$ poll. longis reticulatim 5-costatis.

C. japonica, *A. Gray in Mem. Am. Acad. Nat. Sc.* vol. vi. (1858–9) p. 383. *Miquel Ann. Mus. Bot. Lugd. Bat.* vol. iii. p. 91. (*Prolus. Fl. Jap.* p. 255). *Franch. & Sav. Enum. Pl. Jap.* vol.; p. 93. *Maxim. in Mem. Acad. Sc. Petersb. Ser.* 3, vol. xxix. (1881) No. III. p. 9; *Ic.* p. 13. *Useful Plants of Japan* (1895) p. 125. *Ic.* n. 487.

Croton Siraki, *Sieb. & Zucc. Pl. Jap. Fam. Nat. Sect.* i. p. 36, n. 133, *nomen.* (*ex Maxim. l. c.*).

Arbor foliis Rhamni, &c., *Thunb. Fl. Jap.* 359; pl. *Obsc.* n. 50.

Doko-utsugi, *Jap.*

The most interesting feature of this *Coriaria* is the colour of the flowering and fruiting petals, which varies from cherry- to coral-red, that of all other known species being black or violet-black. Maximowicz indeed, who must have seen the plant in Japan, describes those of *C. japonica* as black, yielding a violet juice, and as there is no allusion to colour in Gray's too brief diagnosis of *C. japonica*, or in any other of the works cited above, it may be doubted (assuming Maximowicz to be correct) whether a black or coloured fruited one should be regarded as *japonica* of Gray. Fortunately a good figure and description in the little work on the "Useful Plants of Japan" (including the poisonous!) referred to above, proves that the one here figured is known in Japan as *C. japonica*, for in it the fruit is represented as bright red, and described as "round, red, very pretty, but poisonous,"

December 1st, 1896.

and here the matter must rest for the present, with the remark, that some very old withered fruits of the Kew plant have been observed to turn black, but this is quite exceptional.

The genus *Coriaria*, which contains six or more species, has been ably monographed by Maximowicz in the Memoirs of the St. Petersburgh Academy, where he divides it into two sections; in one, to which all the old world species belong, the racemes are formed on the wood of the previous year, and the bracts are rounded, or ovate; in the other, containing two or more species of New Zealand and South America, the racemes terminate in the shoots of the year, and have subulate bracts. Of the first section there are two divisions, one in which the male and female flowers are much alike, and the filaments very short, to which the European *C. myrtifolia* and the Himalayan *C. nepalensis* belong; the other with very dissimilar male and fem. flowers, and very long filaments, includes *C. japonica*, and the closely allied *C. sinica*, Maxim. The affinities of the genus, which are very obscure, Maximowicz regards as closest with *Simarubeæ*.

The figure of *C. japonica* here given is of a specimen which flowered in Canon Ellacombe's garden, Bitton, early in June of the present year. Another plant flowered at the same time in the Royal Gardens, which was raised from seeds collected in Japan by Professor Sargent. Its nearest ally is the Chinese *C. sinica*, Maxim., which has the fruiting sepals hardly imbricate, and the ripe carpels much smaller, with only three ribs; the colour of the sepals of *sinica* is not given.

Descr.—A low branching shrub, with square stem and branches, flowering on the red-brown branches of the preceding year. *Leaves* one to two inches long, ovate or ovate-lanceolate, acuminate, 3-nerved. *Racemes* springing from the opposite leaf-scars of the branches, two or three together, all female, or one male, one and a half to three inches long, erect or spreading, strict or slightly curved, very shortly peduncled, rarely solitary and terminating a leafing shoot; peduncle clothed with opposite ovate (rarely leafy) green bracts, a sixth to a quarter of an inch long. *Male racemes* more slender, at length drooping; flowers shortly pedicelled. *Calyx* of five small ovate acute

sepals. *Petals* much shorter than the sepals, oblong, keeled dorsally. *Filaments* at first very short, rapidly lengthening and capillary; anthers linear-oblong, smooth. *Fem. racemes* stouter, more strict; bracts ovate, acute, green; pedicels one-sixth of an inch to one-quarter of an inch long. *Flowers* subglobose, bright rose or coral-red, about one-sixth of an inch in diameter. *Sepals* ovate, about half as long as the petals. *Petals* broadly ovate, longer than the ovary, strongly imbricate, tips rounded. *Ripe* carpels an eighth to a seventh of an inch long, subreniform, sides with five strong anastomosing ribs.—*J. D. H.*

Fig. 1, Male flower; 2, petal; 3, fem. flower, pedicel and bract; 4, ovary; 5, section of do., showing the ovules; 6, ripe carpel; 7, embryo;—*All enlarged.*

J. J. del. J.N. Fitch Lith.

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Tab. 7510.

CYPRIPEDIUM Exul.

Native of Siam.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Cypripedium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 634.)

Cypripedium (Coriaceæ) *Exul*; foliis 5–6 loriformibus glaberrimis laete viridibus, scapo elato robusto unifloro viridi cum ovario sepalisque dorso basi pube atro-rubro furfuraceo tomentellis, bractea ampla late cymbiformi herbacea glaberrima, ovario trigono rostrato, sepalis petalisque ciliolatis, sepalo dorsali amplo late oblongo apice incurvo subacuto marginibus undulatis albis, disco viridi maculis atro-rubris asperso, lateralibus in laminam amplam late oblongam pallide viridem obtusam confluentibus marginibus recurvis, petalis late loriformibus obtusis undulatis flavidis basi sanguineo maculatis, disco fascia rubra fere percurso, labello galeato lævi nitido sordide flavo, columna brevi pubescente, staminodio quadrato postice 2-lobo pubescente flavo purpureo punctulato, disco medio umbonato, stigmate amplo orbiculari peltato.

C. Exul; *Rolfe in Journ. of Horticult.* (1892) vol. i. p. 301; *in Lindenia*, vol. vii. p. 81, t. 327 (var. *Imschootianum*); *O'Brien in Gard. Chron.* (1892) vol. i. pp. 522, 523, fig. 77; *Rolfe in Arch. Rev.* vol. iv. p. 271.

C. insigne, *var.* Exul; *Ridley in Gard. Chron.* (1891) vol. ii. p. 94.

C. Exul so closely resembles *C. insigne*, Wall., of the Khasia Hills (tab. 3412) that it may, I think, well be doubted whether Mr. Ridley was not right in referring it as a variety to that plant. The chief structural difference between them that I can detect, is in the form of the staminode and stigma; the staminode in *C. insigne* being more obovate, narrowed and entire posticously, and its stigma is very much smaller. The pubescence is the same in both, as is the great glabrous bract, and the scheme of colouring of the perianth, though differing in detail. On the other hand, *C. Exul* is much the larger and handsomer plant of the two.

Tonka, in the Siam Peninsula, is the native country of *C. Exul*, whence plants were sent to the Botanical Gardens of Singapore and described by Mr. Ridley, as cited above. The fine specimen of it here figured was obtained for the Royal Gardens, Kew, from Messrs. F. Sander & Co., St. Albans, in 1892. It flowered in a warm Orchid House in March.

December 1st, 1896.

Descr.—Stemless. *Leaves* few, six to ten inches long, by one to one and a half broad, strap-shaped, tip 2-toothed, bright green, dorsally keeled. *Scape* a foot high and more, stout, 1-flowered, green, clothed with a dark red purple furfuraceous pubescence, which extends to the ovary and bases dorsally of the sepals and petals. *Bract* nearly two inches long by three-fourths of an inch broad, cymbiform, shortly beaked, herbaceous, green, quite glabrous. *Flowers* four inches broad across the petals, and nearly as much between the tips of the dorsal and combined lateral sepals; segments ciliolate. *Dorsal* sepal one and a half inches long, upwards of an inch broad, arched, subundulate, white, with a pale yellow green disk spotted with red purple; lateral sepals confluent in a broadly oblong subacute herbaceous pale green blade, with recurved margins. *Petals* two inches long, by three-fourths of an inch broad, loriform, obtuse, waved, yellow with three red-purple median nerves and a few spots of the same colour at the base. *Lip* oblong, galeate, dirty yellow, smooth and shining, inflexed margins of the mouth punctate. *Column* short. *Staminode* quadrate, 2-lobed posteriorly, pubescent, disk with a central smooth umbo; stigma broad, circular, peltate.—*J. D. H.*

Fig. 1, Column :—*Enlarged*.

M.S del, J.N Fitch lith.

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Tab. 7511.

IRIS albopurpurea.

Native of Japan.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Plant.* vol. iii. p. 686.)

Iris (Apogon) *albopurpurea*; rhizomate breviter repente, foliis ensiformibus viridibus recurvatis, pedunculo tereti monocephalo foliis æquilongo, spathæ valvis ovatis acutis viridibus, perianthii tubo brevi segmentis exterioribus recurvatis obovatis albis purpureo maculatis, segmentis interioribus erectis oblanceolatis albis immaculatis exterioribus paulo brevioribus, styli cristis magnis margine exteriori rotundatis integris.

A few plants of this fine new *Iris* were imported from Japan, mixed with a quantity of *I. lævigata* (*I. Kæmpferi*, Siebold.) Till they flowered the two species looked very like one another, but when the flowers came out this caught the eye at a glance by the outer segments being much deflexed, and the inner ones erect, whilst in *lævigata* all the six spread horizontally at one level, a character very unusual in the genus *Iris*. Its nearest ally is *I. hexagona*, Walt. (*Bot. Mag.* tab. 6787), a native of the Southern United States. Both *albopurpurea* and *lævigata* were in flower together in damp ground by the side of the lake in front of the Palm House in the Royal Gardens, Kew, from the middle to the end of June, by which time nearly all the other Irises had faded.

Descr.—*Rhizome* shortly creeping. *Leaves* ensiform, green, not very firm in texture, two feet long, nearly an inch broad. *Peduncle* terete, moderately stout, one-headed, not overtopping the leaves. *Flowers* usually three in a cluster, opening successively; outer spathe-valves ovate, bright green at the flowering time, two inches long; pedicels short. *Perianth*-tube short, cylindrical; outer segments of the limb obovate, deflexed, three inches long by half as broad, white, spotted with purple; inner segments erect, pure white, lanceolate, rather shorter than the

outer, half an inch broad. *Crests* of the style-branches large, rounded, and entire on the outer edge.—*J. G. Baker.*

Fig. 1, Front view of stamen; 2, back view of stamen; 3, crests of the style:—*All enlarged.*

INDEX

To Vol. LII. of the THIRD SERIES, or Vol. CXXII. of the whole Work.

7506 Acantholimon venustum.
7497 Actinidia polygama.
7490 Adonis amurensis.
7477 Agave laxifolia.
7485 Akebia lobata.
7454 Alberta magna.
7498 Alocasia reversa.
7456 Asarum maximum.
7484 Aspidistra typica.
7494 Bauhinia Galpini.
7457 Begonia umbraculifera.
7461 Bifrenaria tyrianthina.
7470 Catasetum Randii (*Masc.*).
7496 Celmisia Munroi.
7492 Chonemorpha macrophylla.
7474 Cochlioda Noezliana.
7475 Coffea stenophylla.
7463 Comanthospace japonica.
7509 Coriaria japonica.
7502 Cycnoches Haagii.
7510 Cypripedium Exul.
7488 Cyrtanthus Huttoni.
7453 Dendrobium Hildebrandii.
7493 ,, Leonis.
7464 Dipodium paludosum.
7481 Episcia densa.
7480 Eranthemum reticulatum.
7500 Fritillaria nobilis.
7455 Gazania pygmæa.
7507 Grammatophyllum Rumphianum.
7478 Habenaria Elwesii.
7486 Haemaria Dawsoniana.
7505 Haworthia xiphiophylla.
7460 Hechtia argentea.
7468 Hypocyrta pulchra.
7462 Incarvillea Delavayi.
7511 Iris albopurpurea.
7499 Lathyrus undulatus.
7482 Lourya campanulata.
7476 Masdevallia corniculata, *var.* inflata.
7465 Massonia jasminiflora.
7469 Olyra concinna.
7472 Ostrowskia magnifica.
7501 Parrotia Jacquemontiana.
7504 Pentstemon azureus.
7479 Phajus mishmensis.
7471 Phaleria ambigua.
7483 Pilocarpus Jaborandi.
7473 Pittosporum eriocarpum.
7467 Posoqueria macropus.
7508 Prunus subhirtella.
7503 Rhododendron serpyllifolium.
7495 ,, Smirnovi.
7487 Sansevieria Roxburghiana.
7489 Sarcochilus hainanensis.
7458 Scutellaria formosana.
7491 Solanum cernuum.
7452 Stanhopea Haseloviana.
7459 Sternbergia macrantha.
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